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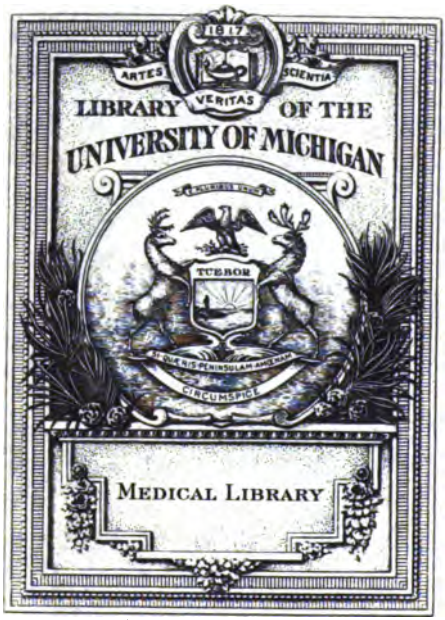
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THE

RETROSPECT

OF

PRACTICAL MEDICINE & SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

Edited by

W. BRAITHWAITE,

Surgeon to the Leeds General Eye and Ear Infirmary, and Lecturer on Midwifery and the Diseases of Women and Children, in the Leeds School of Medicine.

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PRACTICAL MEDICINE,

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

Art. 1.—ON THE NON-IDENTITY OF TYPHOID AND TYPHUS FEVERS.—By Dr. W. Jenner.

[It has been generally held by British physicians, that the *typhus* and *typhoid* fevers are essentially the same disease. Dr. Jenner, however, has come to conclusions precisely the reverse of this, from a careful investigation of a large number of cases which have occurred at the London Fever Hospital. He asserts the diseases to be essentially distinct; and the evidence which he adduces in support of this assertion is derived from the post-mortem examination of sixty-six fatal cases, the symptoms of which he had noted during life. One of the most important points of difference in the symptoms of typhus and typhoid fever seems to be the eruption, by the appearance of which, Dr. Jenner states, he is able positively to declare the nature of the disease. Dr. J. gives the following]

Description of the Rose Spots peculiar to Typhoid Fever.—The eruption in the cases of typhoid fever here analysed was papular. The papulæ, called by Louis *taches roses lenticulaires*, possessed the following characters:—

They were slightly elevated. To detect the elevation the finger had to be passed very delicately over the surface, as they had none of the hardness of the papulæ of lichen, or of the first day's eruption of small-pox. Their apices were never acuminated, never flat, but invariably rounded—their bases gradually passed into the level of the surrounding cuticle. No trace of a vesicle or white spot of any kind was ever detected on them. They were circular, and of a bright rose colour, the latter fading insensibly into the natural hue of the skin around. They never possessed a well-defined margin.

They disappeared completely on pressure, resuming their characteristic appearances as soon as the pressure was removed, and this was true from first to last, from their first eruption to their last trace. They left no stain of the cuticle behind; they never passed into anything resembling petechiæ—the characters they presented on their first appearance continued till they vanished. Their ordinary size was about a line in diameter, but occasionally they were not more than half a line, and sometimes a line and a half in diameter.

The duration of each papula was three or four days; fresh papulæ made their appearance every day or two. Sometimes only one or two were present at first, ran the course above described, and then one or more fresh ones made their appearance, vanished in three or four days, and were followed by others to last as long. The number of papulæ seen at one time on the surface was ordinarily from six to twenty—though occasionally there was only one, and sometimes more than a hundred. They usually occupied the abdomen, thorax, and back, but were occasionally present on the extremities. One was frequently noticed on the thorax, over the cellular interval at the upper border of the pectoralis major on either side.

A *very pale and delicate* scarlet tint of the skin sometimes preceded the eruption of the papulæ, but never lasted more than a day or two. The skin resembling in tint that of a person shortly after leaving a hot bath. Rose

spots were present in nineteen of the twenty-three fatal cases here analysed. There was no eruption detected in four cases.

The date of the first appearance of the papulæ was ascertained in three cases, which commenced suddenly, and was the 8th, 12th, and 20th days; the patients being admitted respectively on the 4th, 5th, and 10th days of the disease. In a fourth case, in which the papulæ first appeared on the nineteenth day, the patient, a strong made butcher's man, left his work only eight days before the eruption appeared, but had been ailing for ten days before he left his work.

The papulæ were present in thirteen cases when the patients first came under observation—three of these cases being seen for the first time on the 9th, 13th, and 18th day of the disease; five on about the 8th, 10th, 12th, 16th, and 22d day; and two on about the 15th, and two on the 28th day. In one case no clue to the duration of the disease before the patient's admission could be obtained. In two cases the date of the first appearance of the spots was not noted.

Of the four cases in which no spots were detected, three had been ill before they entered the hospital more than fourteen days, and one probably more than three weeks. The longest time any given papula remained visible was six days—the shortest time one day. The average duration of each spot, calculated from repeated observations on nine of the cases here analysed, each observation including several spots, was 3·14 days. In three cases which proved fatal on the 32d, 34th, and 86th days, fresh spots made their appearance as late as the 29th, 21st, and 24th days. The first of these cases proved fatal from peritonitis—the other two died of erysipelas.

In seven cases which proved fatal on about the 23d, 25th, 28th, 30th, 44th, 46th, and 71st days, fresh spots were observed to appear respectively, as late as about the 19th, 15th, 24th, 24th, 23d, 24th, and 30th days of the disease. Of these patients, the first three, or those who expired as nearly as could be ascertained before the 30th day, died chiefly from the abdominal lesion. The last four died respectively of pneumonia, sloughing, erysipelas, and pleuro-pneumonia and sloughing.

No second crop of papulæ was observed in seven cases, the patients dying on the 2d, 3d, 3d, 5th 6th, 7th, and 15th days, after they came under observation. In the two cases in which the date of the first appearance of the spots was not noted, the presence or absence of more than one crop of papulæ was not recorded. To sum up—

1. Rose spots were detected during the progress of all the cases admitted before the fourteenth day of the disease.

2. The spots usually appeared between the seventh and fourteenth days after the first symptoms of the disease showed themselves.

3. The ordinary duration of each spot was three days.

4. Fresh spots generally appeared every day or two after their first eruption, till from the twenty-first to the thirtieth day.

5. One case relapsed, and in that fresh papulæ appeared every day or two till the twenty-fourth day, then no more were seen till the thirty-seventh day, after which fresh spots were again noted daily till the forty-ninth day, reckoning from the first outset of the disease.

6. The fever terminated by the thirtieth day, as proved by no fresh spots appearing after that day, unless in the case of a relapse, and by the presence of local complications sufficient to account for death in all cases that proved fatal after that date.

Description of the Mulberry Rash peculiar to Typhus Fever.*—In the cases

* I have ventured to use a new term for designating the rash peculiar to typhus, because I consider it unadvisable to retain any of the names now in use, limited as each of those names is to a peculiar modification of the one rash here described. In consequence of the eruptions in scarlet and typhoid fevers having received names from their colour, and the rash of typhus fever often resembling in hue the stain of the mulberry, I have been led to adopt the above term.

of typhus fever, the eruption was never papular. Its characters varied with its duration. On the first appearance of the rash, it consisted of very slightly elevated spots of a dusky pink colour. Each spot was flattened on the surface, irregular in outline, had no well-defined margin, but faded insensibly into the hue of the surrounding skin, disappeared completely on pressure, and varied in size from a point to three or four lines in diameter. The largest spots appeared to be formed by the coalescence of two or more smaller, and the shape of the former accordingly was more irregular than that of the latter.

Second Stage.—In one, two or three days, these spots underwent a marked change; they were no longer elevated above the surrounding cuticle, their hue was darker and more dingy than on their first appearance, their margins rather more, but still imperfectly defined, and now they only faded on pressure. In this stage they were usually darker, less affected by pressure, and their margins more defined on the posterior than on the anterior surface of the body. In some cases the spots after this grew paler, passed into faintly marked reddish-brown stains, and then disappeared.

Third Stage.—In others a third stage was reached, the centres of the spots became dark purple, and remained unaltered by pressure, although their circumferences still faded; or the entire spots, the circumferences as well as centres, changed into true petechiæ, *i. e.* spots presenting the following characters,—a dusky crimson or purple colour, quite unaffected by pressure, a well-defined margin, and total want of elevation above the level of the cuticle. This alteration was most frequently observed to take place on the back, at the bend of the elbow, and in the groin. At the bend of the elbow they were generally oval, their long axis lying in the direction of the long axis of the arm.

In a large majority of cases, the spots were very numerous, close together, sometimes almost covering the skin. In a few instances, however, they were comparatively few in number, very pale, and situated at some distance from each other. The usual situation of the spots was the trunk and extremities, but occasionally they were limited to the trunk, and now and then were observed on the face. Their number reached its maximum on the first, second or third day, no fresh spots appearing after the latter date, and each spot remained visible from its first eruption till the whole rash vanished.

When very numerous, the whole of the spots seen together on the surface had not an equal depth of colour, many were much paler than the others, and had a dull appearance as if seen through the cuticle. In my notes I have been in the habit of distinguishing these collectively as the subcuticular rash. *It often, by its abundance, gave a mottled aspect to the skin, on which ground the darker spots were seated.*

Variations in the absolute or relative amount of the subcuticular rash, and of the spots, as well as in the depth of their respective colours, cause much difference in the general appearance of the rash. Sometimes it resembles measles so closely as to be distinguished from it with difficulty; at others, it presents that appearance, which has been called the spotted rash; and again, it is sometimes so pale, that unless carefully looked for it might be passed over altogether. When the spots on the back were of a much deeper hue than those on the anterior surface of the trunk, the skin covering the posterior surface was generally considerably congested. Slight pressure of the finger leaving a white mark, which slowly returned to its previous dusky red colour.

The eruption mulberry rash, charasteristic of typhus fever, was observed in all of the forty-three cases of that disease here analysed. The rash appeared in two cases after the patient's admission into the hospital; the date of its first eruption in these two cases was the seventh and ninth days. In the remaining forty-one cases, the rash was developed before the patients came under observation. To sum up—

1. The mulberry rash was present in all the cases.
2. The rash usually appeared from the 5th to the 8th day of the disease.
3. Fresh spots never appeared after the 2nd or 3rd days of the eruption.
4. The duration of each spot was from its first appearance till the death or recovery of the patient from the attack of typhus.
5. The rash disappeared between the 14th and 21st days of the disease; when death ensued after the latter date, it was the result of local disease, which either complicated the progress of the fever, and continued after that had run its course, or sprung up anew, connected or not with the enfeebled state of constitution, the consequence of the fever.
6. In no case was there any return of the eruption, and therefore *no true relapse.* *Monthly Journal, April, 1849, p. 663.*

2.—ON DROPSY.—By Dr. R. B. Todd, F.R.S., Physician to King's College Hospital.

[In an admirable clinical lecture on this subject, Dr. Todd observes that dropsy is nothing more than a symptom of a disturbed state of the circulation, and that the simplest form of dropsy is that which accompanies local derangements of the circulation. One example of this is the anasarca which takes place in the legs of women of weak constitution, after much standing or walking: as a second example, Dr. Todd gives the following:—]

In phlegmonous and erysipelatous inflammations of the skin and subjacent tissue we find a state of œdema affecting the inflamed tissue, and also extending a greater or less distance around it. This is a state of dropsy, for it is caused by an effusion of serum or of liquor sanguinis into the areolar tissue, and this fluid can find its way thither in no other way than by filtration through the parietes of the blood-vessels. Examine carefully a patient labouring under erysipelas of the face, and you will find that the swelling is due entirely to the state of the subcutaneous tissue; and in those parts in which the erysipelatous redness has not yet fully developed itself, that there is, nevertheless, swelling, and that the skin on pressure gives a doughy feel, and pits; the redness depends on the inflammation affecting the true skin, the swelling on the dropsy of the areolar tissue caused by the large attraction of blood to the cutaneous surface.

In like manner, when blood is determined in an unusual degree to certain membraneous surfaces, dropsical effusions are apt to take place into the sacs which these membranes enclose. Hence the accumlation of serum or of liquor sanguinis which so often occur in the sacs of serous membranes after pleurisy, or pericarditis, or peritonitis; and it forms an interesting topic of inquiry and discussion, why these effusions should take place after some pleurisies, etc., and not after others—why some pleurisies will afford no other effusion but that of a small quantity of liquor sanguinis, yielding more or less of plastic lymph, and others will pour out a sufficient quantity of fluid to fill the chest and compress the lung. I dare not digress into this interesting and important field of inquiry, but must content myself with stating my belief that the proneness to liquid effusion in the one case, and the absence of it in the other, is due to a difference in the physical constitution of the blood, which in the former instance is more liquid, and contains a larger amount of water, and less fibrin, albumen, and red corpuscles, than natural; while in the latter case the blood is either normal in its constitution, or contains an excess of fibrine. And I would add further my opinion, that the mode of treatment used in the serous inflammations exercises a very decided influence upon the occurrence or non-occurrence of such effusions, and that the practice of bleeding—especially of venesection—contributes much to the production of them. I can certainly state that, in cases of pleurisy, thoracic effusions have been of rare occurrence of late years in my own practice; and I explain it by the fact, that I have, to a

great extent, abandoned the mode of treating these inflammations by large sanguineous depletions, and content myself with adopting other means of an antiphlogistic nature, which although less showy, and less bold, are safer, and not so trying to the patient, and ultimately more satisfactory both to him and his physician. It is to large venesection that I have a particular objection: and, indeed, my experience enables me to express the opinion that general blood-letting is unnecessary, and, therefore, superfluous in most cases of pleurisy. If blood is to be taken away at all, let it be locally, by the application of leeches, or, what is still better, by cupping.

You observe, I make use of the expression "blood determined to a part." This is a phrase much used by medical men, and one which I think we may continue to use without disadvantage. It implies that the blood-vessels of a part obtain more than their usual share of blood, but expresses nothing as to the cause or the mechanism of the determination. Undoubtedly local determinations may arise from very different causes, and by very different kinds of mechanism. The problem, "Why a particle of dust adhering to the conjunctiva makes and keeps the conjunctiva as red as velvet," has not yet received a clear and definite solution. My own belief upon the point is, that local determination such as this—due clearly to the presence of some irritating agent, whether in the blood-vessels, or external to them—cannot be satisfactorily explained without assuming the existence of a force which operates directly upon the blood in the capillaries—a *vis a fronte*, which, by its attractive power, assists and regulates, by distributing in due proportion the *vis a tergo* of the heart.

An enfeebled condition of this force, and an augmented power of it, may equally tend to the production of very similar phenomena, often readily distinguishable by a practised eye, but which sometimes cannot be distinguished except by experiment. Under both conditions you may have determination of blood, congestion, or hyperæmia: in the one case it will be a passive, in the other an active congestion; in both cases you will have dropsy, i. e., effusion of serum through the walls of the over-charged blood-vessels, and this dropsy will be in one case active, in the other passive, but in both cases the proneness to dropsy will be favoured by the fluidity of the blood, its aqueous character, the diminished amount of its red particles.

[Dr. Todd then proceeds to speak]

Of Dropsy after Scarlet fever.—There is a remarkable form of dropsy, of which, I think, no adequate explanation has as yet been offered. This is a *general dropsy*, affecting not only the whole of the subcutaneous areolar tissue, but very frequently the serous sacs, the pericardium, the peritoneum, and the pleura, often the ventricles of the brain, and even in some instances the areolar tissue of the lungs. The dropsy to which I refer is that which follows scarlet fever.

The *conditions* of this dropsy are—1st, a particular state of the *skin*; 2nd, a particular state of the *kidney*; and 3rd, I would add, a particular state of the *blood*; and I think you do not get the dropsy fully developed without the concurrence of all three conditions; if any one of them is absent you may have a threatening of the dropsy, but the result does not follow. Thus you may have the peculiar state of the blood, and the peculiar state of the kidney; but if the state of the skin be normal, the dropsy will be slight, or *nil*. Just so, when the peculiar conditions of the blood and of the skin are present, but the kidneys are healthy; and even if the particular state of the kidney and skin both existed, (and under such circumstances, you could scarcely have a healthy state of blood,) yet, if the state of that fluid did not correspond with that which is favourable to dropsy, you would have other symptoms,—head affections, for instance,—but there would be no dropsy.

You will find a good illustration of the ordinary clinical history of this dropsy, in the case of a little boy in Sutherland ward: Thomas Dunn, æt. 5. He seems to have had mild scarlatina, and swelling appears to have come on shortly after the commencement of the desquamative stage. When he

came into the hospital he was suffering from universal dropsy, affecting even his peritoneum. His skin was puffed out every where, especially over the penis, scrotum, extremities, and face, and it had that peculiar white, semi-transparent, waxy appearance, which is so characteristic of these cases. I think it very probable, too, that there was either an excess of sub-arachnoid fluid, or what is more likely, slight effusion into the ventricles of the brain; for during the first two or three days after he came in he was very drowsy and lethargic; and no doubt the impure state of his blood contributed much to the lethargic condition. His urine was deficient in quantity, smoky in colour, and it shewed a great abundance of albumen on the application of the appropriate tests. Now let us see in what way this case presented those three conditions, the concurrence of which I have just now stated to be necessary to the production of dropsy.

1. The *skin* was dry, rough, and harsh, and there would seem to be an irritated state of it; but this irritation was not extreme; and I think it would have been better if it had been made more so, as it would have enabled the patient to have thrown off more completely by cutaneous elimination the poison of the malady; for it is a known fact that the dropsy occurs in the mildest forms of scarlet fever, in which there had been little or no eruption; but in those cases in which eruption had come out well, and that desquamation is consequently excessive, no trace of it is to be found.

2. The *kidney* was in a very analogous condition to that of the skin; as there has been a desquamative state of the one, so there has been of the other. When we examine the kidney in these cases, (and now, thanks to recent researches, of which those of our friend Dr. Geo. Johnson are among the first both in time and importance, we have a very exact knowledge of its precise anatomical condition in this form of disease,) we find it filled with epithelium, and the whole organ enlarged, and in a state of hyperæmia, as far as this great filling of the uriniferous tubes will permit it to be so. There is not only a large quantity of blood in the organ, from the undue attraction of blood to it by reason of its irritated state, but the blood is irregularly distributed in it. The principal anatomical change in the kidney results from the developement of an undue quantity of epithelium in the uriniferous tubes.

The accumulation of epithelium creates an unnatural distension of the tubes, and the small vessels which ramify upon their walls (forming the portal vessels of the kidney) become compressed. Thus the blood is thrown back on the Malpighian bodies, so that the vascular system becomes irregularly supplied, the Malpighian bodies being very full of blood, but the portal system almost empty. Hence but a small portion of urine is secreted, and that containing serum or blood in large quantity; and this imperfect elimination of water is negatively a further cause for the accumulation of epithelia in the uriniferous tubes, as there is less fluid to wash them out.

The diagrams are intended to represent how the irregular congestion of the kidney in this disease takes place. One of them shows the arrangement of the vascular system with reference to the tubes in a healthy state; the other shows the tube enlarged, in consequence of the accumulation of epithelium in it; the afferent vessels being dilated because of the increased flow of blood to the kidney, and the efferent Malpighian vein being much enlarged from the obstacle to the free transmission of the blood through the portal plexus, which is represented as containing but little blood. The Malpighian tuft placed between the afferent artery and efferent vein of the Malpighian body is greatly enlarged, and two or three of the small vessels composing it are represented to be ruptured, and giving exit to the blood into the uriniferous tube.

The congestion of the Malpighian bodies, when it exists to a certain amount, produces effusion of liquor sanguinis into the tubes; but when it exists to a still greater degree, it leads to rupture of the Malpighian vessels, and the escape of all the constituents of the blood: in the former

case, the urine is merely albuminous; in the latter, in addition to the albumen, we find in it an abundance of blood-corpuscles, and fibrinous casts of the tubes, from the fibrine having moulded itself to their walls in the process of coagulation. This is the state of the kidney, and accompanying it is always that peculiar smoky condition of the urine, very characteristic, into a particular description of which it is unnecessary for me at present to enter.

3. The blood. What is the condition of the blood? Whoever looks at our patient, and, indeed, at all patients labouring under this form of dropsy, will see at once that there is every indication of a great want of red particles, and a too watery condition of the blood. I know of no good analysis of the blood in the scarlet fever dropsy, but I would venture to say that there must be a deficiency of albumen, and that the specific gravity of the serum must be below the natural standard: sometimes considerably so. I have not ascertained it in the present instance, from my unwillingness to impoverish my patient's blood, already too poor; but I feel assured that any future case that might admit of the examination would confirm my supposition, and that the blood would be found deficient in its solid elements generally. Now this is a state that must be highly favourable to the filtration of the liquor sanguinis through the walls of the capillaries, under particular circumstances.

These facts, I think, will lead us to form something like a theory of the foundation of this dropsy. What we have got to explain is this, that to-day a child may be going on very well, and to all appearance in a favourable convalescence, and in a few days afterwards may rapidly become universally œdematous, with effusions to a greater or less extent in the various serous cavities, accompanied by scanty urine, smoky in colour, and albuminous; in fact, exhibiting all the appearances I have already described. I think, if you look to the three conditions which I just now mentioned, you will get it satisfactorily explained.

First.—From some cause not easy of detection, but in some instances undoubtedly from exposure to cold, there is an arrest to the proper elimination of the scarlet fever poison through the skin, its usual emunctory, and the ordinary execretion of water through that organ is checked; not obtaining complete egress there, the poison finds for itself another channel, and is thrown on the kidneys. Its passage through those organs produces great irritation in them, the effect of which is, that water is imperfectly eliminated, and thus the escape of water from the blood is prevented through its two ordinay channels—namely, the skin, which is an emunctory of it, and the kidney, which is the emunctory of it *par excellence*.

Secondly.—As a direct consequence of this obstruction to the escape of water through its two principal channels, a watery condition of the blood is induced. It is calculated that we get rid of three pints of water in a day, by the secretion of the kidneys, and by cutaneous perspiration, and certainly this is not too high an estimate. Now this water must be got rid of in some way or other, and when its usual channel of escape is cut off, it is very apt to permeate the parietes of the blood-vessels. But why do we find it particularly in the areolar tissue, and why in that of the skin more than any other part? It finds its way into the areolar tissue of the skin, in consequence of the determination of blood to the skin due to its state of irritation, for in order to reach the skin the blood must pass through the subcutaneous areolar tissue. It would be wrong, however, to suppose that the effusion was confined to the neighbourhood of the skin; we find it in the areolar tissue of the lungs, and in the serous cavities; in the former, because of the necessarily large flow of blood to the lungs; and in the latter situation, because of the great tenuity of the tissue of the serous membrane, which affords but little obstacle to the escape of the serous part of the blood.

Thirdly.—All this is favoured by the impoverished state of the blood. If

the scarlet fever poison is not eliminated, it interferes with the proper nutrient changes which take place in the blood; and this is shown by the imperfect development of red particles. I think that the poison of scarlet fever interferes with their formation in the same way as that of rheumatism does, and indeed other poisons likewise, inorganic, as well as animal—as for instance, lead. This impoverished state of the blood, undoubtedly interferes with the proper rate and vigour of the capillary circulation. That attractive force which I have already referred to, the capillary force, or *vis a fronte*, cannot be so vigorous when the blood is deficient in all or nearly all its solid ingredients, as when the fluid is healthy. It is not improbable, likewise, that there be some other special chemical condition of the blood. Magendie and Poiseuille found that the introduction of alkalies into the blood occasioned a great retardation of the circulation through the capillaries, and consequent dropsical effusion; what the precise condition of the blood is in scarlatina has yet to be shown; at present we can only conjecture that some such abnormal state of it does exist; that is to say, that, besides containing too much water, and too little colouring matter, it contains some special chemical agent likewise, which interferes with its proper vital changes.

[In the *treatment* of the dropsy which follows scarlet fever, Dr. Todd recommends as the most valuable remedy, taken singly, the warm-bath, which acts by allaying the irritation of the skin and kidneys. It must be used once or twice a-day, or less frequently, if it appears to depress the strength. Next in importance are hydragogue purgatives, and such of the milder diuretics as do not irritate the kidneys; as liquor. ammon. acet., or bitartrate of potash, especially the latter. If after a few days of this treatment, the affection does not yield, small quantities of blood may be taken from the loins by leeching or cupping. Dr. Todd says:]

In pursuing this treatment, I pray of you to regard it not as antiphlogistic, but calmative and eliminatory, soothing cutaneous and renal irritation, eliminating water by the bowels, the kidneys, and the skin. For whilst using these remedies you must always support your patient by nourishing food, and often you must stimulate: frequently you will find the most signal benefit derived from giving port wine. Do not, when you feel that your patient's strength needs it, be deterred from giving stimulants by the fear of exciting fresh irritation of the kidneys. Your best guide as to the propriety of continuing stimulants or any other food, is the facility with which your patient *digests* them. If they create flatulence, gastric distress, pain, or any other symptom referable to the stomach, you must diminish the quantity or stop the supplies.

Sometimes in the course of this disease you have symptoms of head affection. These arise either from dropsy of the ventricles, or from poisoning of the brain by retained urea. Free counter-irritation immediately and extensively applied to the nucha or the scalp, is the best remedy; and generally speaking, bleeding, local or general is inadmissible. Sinapisms, succeeded immediately by blisters, are most valuable remedies in these head affections.

Medical Gazette, Feb. 23, 1849, *p.* 308.

[In a subsequent lecture, Dr. Todd makes the following remarks on the urine of the boy whose case is mentioned above. He says:]

Some of the urine of this patient has been collected in this white vessel (a *white* vessel is particularly useful for this purpose, as it shows the colour of the urine so well): you observe at the bottom a deposit of a dark sooty matter, having a shade of red: this depends on the presence of numerous blood-corpuscles, which are blackened by the acid of the urine, and also of particles of lithic acid. So long as the urine exhibits this character so long our patient requires careful attention, as the presence of blood or of lithic acid, and especially of both, indicates a disturbed state of nutrition of the kidney, probably an irritated state of it. A simple way of ascertaining what is the cause of the smoky discolouration of the urine is to apply the

test for albumen: if the presence of that is indicated, we may infer that there is blood; but if it is not present, we conclude that lithic acid is the sole cause of the appearance. But the best mode of determining this question is *to* examine the sediment with the microscope, when both the blood globules and the grains of lithic acid will be at once recognised, if they exist by their characteristic appearances. But whichever it be, it need make no difference as to the treatment; for this deposit of lithic acid or the presence of blood in the urine, indicates a more or less congested, perhaps an irritated, state of the kidney, to be relieved by a certain amount of antiphlogistic treatment. It is in this stage of the disease that, as I think, most benefit is derived from the occasional application of one or two leeches to the region of the kidneys, care being taken not to allow much loss of blood. In children this precaution is the more necessary, as they are so prone to great hæmorrhage from leech-bites.

[Dr. Todd then proceeds to speak of acute inflammatory dropsy. After relating a case, and mentioning the ordinary symptoms, he makes the following remarks on the *complications* which sometimes occur:]

a. Intrinsic complications, or those connected with the kidney itself:—

1st. The most common effect of the renal irritation which comes on so early in these cases is a great increase in the quantity of epithelium formed in the renal tubes, and the desquamation or casting off of this epithelium in considerable quantity. In scarlet fever a similar condition of the skin and of the kidney is apt to exist at the same time; as there is an inordinate shedding of epidermis, so there is also of renal epithelium: but in these cases the desquamative state of the kidney exists without a corresponding desquamative condition of the skin.

2nd. Hæmaturia. Probably whenever the irritation is sufficient to cause desquamation it always produces the escape of *some* blood; but this is generally in so small a quantity, as only to cause a smokiness of the water. Sometimes, however, the hæmorrhage is considerable, and when it is so it constitutes the most difficult symptom for the physician to contend with. Perhaps you may remember a case we had in the hospital in the summer, in which the first symptoms were suppression of urine and universal dropsy; the secretion of the kidneys was soon after re-established, but with it a most extensive hæmorrhage from the kidneys, so that it became no longer a case of *dropsy* but one of *hæmaturia*. That case exactly represents what is too apt to take place in this acute inflammatory dropsy. If the primary state of irritation or inflammation of the kidney does not go off by resolution, it is very apt to assume this hæmorrhagic condition. The vessels, long dilated by the pressure of an undue afflux of blood, suffer in their contractile power, and, becoming greatly weakened, give way at various points; nor do they recover, until the general nutrition of the kidney is restored, the undue afflux of blood removed, and the gland reduced to its natural size by the discharge of the great mass of epithelium which distended its tubes, and contributed largely to its enlargement.

3rd. A third and much more formidable complication is when the inflammatory state passes into suppuration. This is different from the ordinary or phlegmonous suppuration of the kidney, in being much more extensive, and having several suppurative centres, thereby leading to a more complete and extensive disorganization of the kidney.

b. A very formidable complication of this form of dropsy is that which arises from the inflammation of one or more of the serous membranes, which sometimes supervenes. A man may be going on to all appearance very well, with, however, a diminished secretion of the kidney, when suddenly an attack of pleurisy sets in with more or less fibrinous or serous effusion; and in some instances the inflammation is not limited to the pleura, but the pericardium and peritoneum are affected. I have seen inflammation of all the three cavities come on in the same day. Such cases are, of course, extremely rare, but a serous effusion into one or more of the great

cavities—most commonly into the peritoneum—is of very frequent occurrence, in consequence, probably, of the diminished density of the blood. There is at all times a great tendency to it. The most probable explanation of these phenomena is this:—Owing to the imperfect action of the kidneys, the urea, as is proved by abundant evidence, is not eliminated from the blood, but accumulating there, is thrown off in some minute quantity by that slight effusion or halitus that is constantly going on in the serous membranes, and thus becomes a source of irritation, in just the same way as we have seen the rheumatic poison a source of inflammation of the synovial membrane of the knee joint. Hence you have increased afflux of blood to these surfaces, with generally serous effusions, and in some instances formations of lymph and adhesions. And I think it is in this class of cases, and also in those renal diseases connected with gout and rheumatism, that you most frequently find serous inflammation: they do not, I think, occur so commonly with the *true fatty* disease.

It is very rare to meet with arachnitis in acute dropsy. States of delirium, and even mania, often supervene; but these are due to a disturbed nutrition of the brain itself; either due to the watery and pale state of the blood, or to the irritation of the brain by retained urea. When you examine cases of this description after death, you find no evidence of recent serous inflammation, but only a pale state of the brain, which is of less than its normal bulk, and is surrounded with more subarachnoid fluid than is usual in the state of health. The delirium, in these cases, is very analogous to that which occurs in rheumatism and gout.

c. Lastly, you may have as a complication of this dropsy an irritated state of liver, coexistent with the analogous state of kidney; and it is not improbable that this may be the reason of the greater frequency of serous effusion—of dropsy of the peritoneum, than of the other serous sacs. In all instances when the liver is irritated, you may expect to find some degree of yellow discolouration of the skin, and the dropsy not confined to the areolar tissue, but affecting the peritoneum also.

Pathology.—What conclusions may we come to as to the *pathology* of acute dropsy? We know that the kidneys are in a state of congestion, which is obviously denoted by their appearance: the cortical substance is red and congested; the Malpighian bodies being large and full: the redness of the cortical substance is in strong contrast with the whiteness of the tubular portion, which is caused by the abundance of epithelium with which the tubes are filled. If examined with a microscope in an early stage, we can see the epithelium quite filling the tubes. We thus obtain clear evidence of an irritated state of kidney, and we also know from the previous history of the case that there has been such exposure as would be likely to arrest the excretion by the skin; and thus we have very much the same conditions supplied as in dropsy from scarlet fever—namely, an irritated state of kidney, and an abnormal state of skin.

No doubt, the secretion of the skin being checked, the lactic acid which should have passed off by it makes its way out through the kidneys, there acting as a source of irritation: it produces congestion, and this congestion so interferes with the function of the organ that the secretion ceases: the water that should be eliminated is not, but accumulates in the blood; and this watery blood transudes the parietes of the capillaries, while the particular portion of the areolar tissue into which it shall be poured—the subcutaneous—is determined by the irritated state of the skin, which attracts the blood to it in large quantity. The pathology of this form of dropsy is, then, in all essential points, the same as that of dropsy after scarlet fever.

[The *prognosis* in these cases, Dr. Todd remarks, may be favourable, except we have reason to suspect fatty disease of the kidney, the symptoms of which are very insidious. Speaking of this condition, he says:]

The deposit begins to be formed in a few set of tubes; it gradually extends itself, producing partial congestion of the kidney. At first these con-

gestions are not sufficient to affect the physical condition of the urine, which, if examined at this period, would not afford the slightest indication of disease. By and by some of the Malpighian bodies become so filled by the retardation of the flow of blood through them, that the serum filters through them, and passing off with the urine, makes it albuminous. This escape of serum offers some relief to the congested parts of the vascular system of the kidney: and if the cutaneous secretion is fairly kept up, and the digestive organs act normally, the patient goes on for a considerable time—sometimes, perhaps, for years—without being aware that there is anything wrong with his kidneys. But let any check to the perspiratory action of the skin take place, as from exposure to cold, and immediately the renal congestion becomes general, and dropsy occurs rapidly, and these symptoms show themselves the more rapidly, and the more completely, because of the previously existing partially congested state of the kidney, and the more or less impoverished state of the blood.

Cases such as these are of very frequent occurrence in the London hospitals, and many of the instances of cured or relieved Bright's disease are of this description. The patient receiving the care and comforts of an hospital, his skin quickly resumes its normal action, the kidneys cease to be congested, the urine flows freely, and the dropsy disappears.

To enable you to arrive at a correct opinion as to the fate of a patient suffering from acute dropsy, you must look carefully to the state of the kidney, the liver, and the heart. You should examine the urine daily: for this purpose you will derive the greatest help from the microscope, not only on account of the rapidity with which it supplies you with the information you seek, compared with the slowness of chemical operations, but because you can determine by it the presence of various matters in the urine, which chemistry could not disclose to you; such is apithelia, casts, &c. By it you can recognise in two or three minutes, if they exist, blood corpuscles, lithic acid, epithelium cells. and pus globules; and hence you may at once determine whether the smokiness is due merely to lithic acid, or to hæmorrhage—whether the kidney is in a desquamative state—whether it has passed on to a suppurative—or whether its tubes contain fatty epithelium. Therefore, if you wish to obtain an accurate knowledge of the condition of your patient, learn to recognise all these substances by the microscope, and inspect the urine from day to day.

[The treatment of inflammatory dropsy consists, 1st, in the use of the hot air or warm bath, and 2d, in local bleeding; general bleeding is usually to be avoided, but may be resorted to when there is congestion of the lungs, and the patient is young and robust.]

3rd. Purgatives, as indirect methods of relieving the congestion, are of great value; they eliminate water and various morbid matters.

4th. Sudorifics may also be employed, and of these the best is the liquor ammoniæ acetatis, in at least half-ounce doses, two or three times a day. This may occasionally be combined with tartar emetic. Dover's powder is generally less suitable on account of the tendency of the opium to check secretion.

5th. Diuretics. When the congestion of the kidney has been relieved, diuretics may be given with advantage. Of all this large class, the best, I think, is the common cream of tartar, in doses of from half a drachm to a drachm frequently during the day. If you give larger doses it acts on the bowels, and being carried off by them does not prove a diuretic. Digitalis, with due precaution, is also very useful.

Irritative diuretics (as cantharides, squills) must be avoided in cases of this kind for obvious reasons, although they are very serviceable in other forms of dropsy. Broom tea, or the compound decoction of broom of the Pharmacopœia, is also useful; and the latter probably derives some advantages from the taraxacum which it contains. The diuretics first mentioned, however, are unquestionably the most to be relied upon, and the most efficient.

There is one thing that I must caution you against in the treatment of acute dropsy, and that is, the use of mercury. This mineral, so valuable in some diseases, is in these cases useless, and even mischievous; at any rate, I have failed to observe any benefit from it. For these reasons it is better to abstain from its employment, unless occasionally you may have recourse to it as a purgative. But even for this purpose there is no absolute need for you to use it, as there are many other medicines which answer as well, if not much better. Moreover, in all cases of imperfect action of the kidneys, whether acute or chronic, patients are quickly salivated, and the salivation is very apt to prove troublesome and painful: large sloughs form in the mouth, and the fœtor of the breath becomes intolerable to both the patient and his attendants. *Med. Gaz., April 6th, 1849, p. 582.*

3.—TREATMENT OF DROPSY BY THE JUICE OF THE FRESH ROOT OF THE ELDER.

Boerhaave, Gaubius, Sydenham, and, more recently, Martin-Solon, have recommended the juice of the inner bark of the common elder (*sambucus nigra*) as of great efficacy in dropsies. M. Rene Vanoye strongly recommends, for the same purpose, the fresh juice of the root. The following are the conclusions which he has arrived at, as stated at p. 246 of Bouchardat's *Répertoire de Pharmacie* for Feb., 1849:—

1. The fresh juice of the root of the elder may be adminintered in all serous accumulations and infiltrations, which require the use of drastics. 2. It generally acts with greater energy and rapidity than the most active purgatives. 3. There is no advantage in combining it with drastics or diuretics; its action is never more apparent than when used alone, and to the exclusion of other treatment. 4. The first doses ought to be pretty strong; when they cause vomiting, the use of the medicine must not be abandoned, but it ought to be suspended for some days, if the vomiting be continued and severe. It is rarely necessary to give more than from 120 to 150 grammes, by the mouth, in spoonfuls. 5. Occasionally, this juice cures dropsies when other means fail. 6. The dangers connected with its employment are not serious. M. Vanoye adds: "I hope that these assertions, founded on actual observation, will induce physicians, especially those who practise in the country, to have recourse to a substance which can be used with such facility, and the efficacy of which is so great."

Pereira does not mention the root of the elder; but with reference to the *inner bark*, he says: "It has been used as a hydragogue cathartic in dropsy. It may be given in decoction (prepared by boiling one ounce of the bark in O ij. of water to O j.) in doses of f. ʒiv. Smaller doses have been used as an aperient and resolvent in various chronic disorders."—Edit. 1842, pp. 1442. *London Journal, April, 1849, p. 380.*

4.—ON THE BLOOD AND URINE IN GOUT, RHEUMATISM, AND BRIGHT'S DISEASE.—By Dr. A. B. Garrod.

[At page 25 of our seventeenth Part, will be found a short statement of the conclusions come to by Dr. Garrod upon this subject. We here reprint them at greater length. With respect to gout, Dr. Garrod says:]

1st. The blood in gout contains *uric acid* in the form of urate of soda, which salt can be obtained from it in a crystalline state.

2d. The uric acid is diminished in the urine, immediately before the gouty paroxysm.

3d. In patients subject to chronic gout with tophaceous deposits, the uric acid is always present in the blood, and deficient in the urine, both absolutely and relatively to the other organic matters, and the chalk-like de-

posits appear to depend on an action in and around the joints, &c., vicarious of the "uric-acid-excreting" function of the kidneys.

4th. The blood in gout sometimes yields a small portion of urea (no albumen being present in the urine).

The experiments and analyses which favour these conclusions were chiefly made on patients in University College Hospital.

[With respect to the state of the blood in acute rheumatism, Dr. Garrod says:]

The results which I obtained appear to indicate that—In rheumatism, the blood contains no more uric acid than in health; and no urea can be detected in 1000 grains of serum. Many cases were taken to prove this conclusion. In acute rheumatism there is no evidence of any deficient "uric-acid-secreting" power in the kidneys, and the urine is also generally loaded with urea. Blood from patients suffering from Bright's disease, and albuminuria after scarlatina, was then examined: the results of these analyses appear to show, that—

1st. Uric acid is always present in the blood in albuminuria. The quantity, however, greatly varies: when the functions of the kidneys are much impaired, it exists in quantities almost as great as in gout; in other cases its amount is small, but it usually exceeds that found in ordinary blood.

2d. Urea always exists in large quantities in this blood, (a fact which has been long since proved), and no relation is found between the amounts of urea and uric acid.

3d. The kidneys are always deficient in their power of throwing off urea; but with regard to the uric acid, their excreting function may be impaired or not.

The results of these experiments on the condition of the blood and urine, prove that uric acid is not a product of the action of the kidneys, as is frequently supposed, but that it is merely excreted from the system by these organs. They always appear to indicate that the excreting function of the kidneys, with regard to the solid portion of the urine, is not simple, but that the urea and uric acid are separately eliminated; also that one of these functions may be impaired or destroyed, the other remaining entire. With regard to the solid and fluid portions of the urine, Mr. Bowman has already shown the probability of different structures in the kidneys being concerned in their excretion.

It appears also probable that, as in albuminuria, the "urea-excreting-function" being chiefly impaired, we find a vicarious discharge of this body in the dropsical effusions; so, in gout, the "uric-acid-excreting-function" being defective, the chalk-like deposits are produced, by a similar vicarious discharge of urate of soda.

Gout would thus appear partly to depend on a loss of power (temporary or permanent) of the "uric-acid-excreting-function" of the kidneys; the premonitory symptoms, and those also which constitute the paroxysm, arising from an excess of this acid in the blood, and from the effort to expel the "materies morbi" from the system. Any undue *formation* of this compound would favour the occurrence of the disease; and hence the connection between gout and uric acid, gravel and calculi; and hence the influence of high living, wine, porter, want of exercise, &c., in inducing it. This hypothesis would also explain two facts which have been regarded as militating against its humoral pathology; viz., the *hereditary* nature of the affection, and also its frequent occurrence in *low states* of the system; for we can understand that the peculiarity of the kidney, with reference to the excretion of the uric acid, may be transmitted; and likewise, that when the function in question is permanently injured, it will not require an excessive *formation* of the acid to cause its accumulation in the blood.

Dr. Todd's observations on what he terms the "gouty kidney," appear to favour this view. This hypothesis would also remove gout from acute

rheumatism, for no excess of uric acid was found in the blood in this affection. Again, if we take into consideration the cause of the latter affection and the subjects in whom it occurs, we must be led to consider the two dieases as analogous only as far as they both affect similar structures. What greater analogy exists between gout and rheumatism, than between any two skin diseases? *Medico-chirurgical Transactions*, 1848, p. 84.

5.—OBSERVATIONS ON GOUT.

[A writer in the British and Foreign Medico-Chirurgical Review observes:]

As to the therapeutics of gouty affections, we need scarcely advert to the necessity of investigating the condition of the kidneys and skin, but especially of the former, and of specially noticing the urinary and cutaneous secretions. To restore the due action of the skin and kidneys is, in a great majority of cases, the principal indication, and, when fulfilled, suffices for the cure. Modern chemistry has shown that colchicum has the effect of increasing the amount of lithates, or lithic acid in the urine, when its excretion is suppressed—a fact long known, although recently "discovered" by some modern investigators.

Professor Chelius found that the quantity excreted was nearly doubled after taking the remedy for twelve days. In those cases, however, in which the urine is loaded with lithates, due probably to an inordinate production of them in the organism, colchicum has, apparently, the effect of clearing the urine of them. Dr. Graves published statements to this effect, in a clinical lecture in the seventh volume of the London Medical Gazette, manifestly being of opinion that they were inconsistent with, and opposed to, the generally-received humoral pathology of gout. There does not appear, however, any discrepancy in these facts; colchicum may facilitate excretion of urea or the urates if retained, by its direct action on the blood and the excreting organs; or when formed in inordinate quantities, and at the same time excreted—at least in part—may restrain that inordinate formation by its action on the tissues.

Be this as it may, colchicum is an invaluable remedy in every form of gout. It should not be given indiscriminately, and in large doses only in the peracute forms. In all the more chronic forms, minute doses are indicated, as, for example, the fifth or fourth of a grain of the acetous extract, and in combination with alkalies, chalybeates, minute alterative doses of the salts of mercury, or with the salts of iodine, particularly the iodide of potassium. The chlorides and bromides, especially in the homœopathic doses found in mineral waters, are very useful in the asthenic forms. Where colchicum cannot be borne, even in minute doses, the ranunculaceous plants may be tried, as the black hellebore, or the common buttercup of the meadows—ranunculus acris. The ranunculaceæ were well known to the ancients as being powerful remedies in gouty affections.

Brit. and For. Med. Chir. Review, April, 1849, p. 476.

6.—ON THE TREATMENT OF RHEUMATIC GOUT BY LEMON-JUICE.—By Dr. G. O. Rees, F. R. S., Assistant Physician to Guy's Hospital.

[A girl, 18 years old, was admitted into Guy's Hospital under Dr. G. O. Rees, on the 8th of December, suffering severely from "Rheumatic Gout;" (acute articular rheumatism?) A calomel and rhubarb purge was given, and then lemon-juice, in half-ounce doses, with a little camphor mixture, thrice a-day. By the 13th the pain had entirely left her; it did not return—and after the administration of tonics, she left the hospital. Dr. Rees observes:]

It is principally owing to the very surprising effects which I have ob-

served from the use of lemon-juice in the treatment of rheumatic gout, that I have been induced to notice this case. I have been now for several months in the habit of prescribing the remedy, with such marked and, I may add, rapid benefit, that I am unwilling to delay bringing it before the notice of practitioners.

Among the out-patients at Guy's Hospital, I have met with several prominent examples of cure, notwithstanding that such instances are necessarily derived from a class of persons who are by no means able to assist our treatment by following out our directions either as regards diet or regimen. The early relief from pain was such, that had any one unacquainted with the remedy in use watched the progress of the case, they would almost inevitably have concluded that sedatives had been resorted to.

I first had recourse to lemon-juice for the cure of rheumatic gout from a belief that the vegetable acids (probably owing to the excessive quantity of oxygen entering into their composition) contributed to effect the transformation of the tissues generally, and because lemon-juice was the most palatable form in which such class of remedies could be applied. Moreover, it appeared probable that the supercitrate contained in the juice, though in small quantity, was a form of alkaline salt likely to contribute to the alkalinity of the blood in its transformations; knowing as we do, from the examination of the urine, that such organic compounds become converted into carbonates during digestion and circulation.

Medical Gazette, Jan. 25, 1849, p. 156.

7.—ON THE TREATMENT OF ACUTE RHEUMATISM BY NITRATE OF POTASH.—By Dr. W. R. Basham, Physician to the Westminster Hospital.

The author takes, as the basis of his essay, the following facts: 1st, that in acute rheumatism, as in other inflammatory diseases, the most important changes in the composition of the blood are the increased quantity of fibrine, and the deficiency of the saline ingredients; 2nd, that where this state of the blood exists there is a special disposition to the deposit of fibrine, and the formation of adventitious tissues; while in diseases in which the fibrine is deficient, and the salts in excess in the blood, the blood does not coagulate, and hæmorrhages of a passive character occur; and 3d, that although, as his own experiments have satisfied him, saline solutions have not the power of dissolving coagulated fibrine, yet certain salts in solution mixed with the blood at the moment of its escape from the body, possesses the property of suspending or retarding the separation of the fibrine. He next inquires whether any therapeutic principle can be derived from these facts, and proposes the question, whether saline remedies, largely employed, may not suppress the tendency to the fibrinous exudation, or retard it, so as to give time for other remedies to diminish the proportion of fibrine present in the blood. With reference to this question, he alludes to the observations of several physicians on the use of nitrate of potash in acute rhematism, and details his own experience of its effects. He gives one, two, or three ounces of nitrate of potass, largely diluted, (in two quarts of water), in the twenty-four hours. In the majority of cases no obvious effect is produced on the force or frequency of the pulse, the digestive functions, or the quantity of urine exuded. But the urine always acquires a high specific gravity, and nitrate of potass may be detected in it. The swelling, heat, and pain of the joints affected with rheumatism are relieved in a most marked degree, even when no other remedies are employed at the same time.

There is a certain amount of exemption from cardiac complication; and cardiac inflammation, when present, is more amenable to remedies. In a case which the author relates, he examined the blood of the patient before the commencement of the saline treatment, and again after this treatment

had been continued for some days. In the first instance it was buffed and cupped, the fibrine was in excess, and the salts were deficient. After the administration of the nitre there was no buffy coat, the proportion of the fibrine had diminished, and that of the salts greatly increased. The author presumes, therefore, that while the internal use of the nitrate of potass assisted to restore the proportion of the saline constituents, the other treatment tended to lessen the excess of fibrine. Some remarks of Mr. Gulliver have led the author to investigate the effects of the external application of saline matters to parts affected with rheumatism. His experiments have been principally made with nitrate of potass. In chronic rheumatism he has used the iodide of potassium, and in gout the bibasic phosphate of soda. He applies the saline substance by means of the spongio-piline, a portion of which, large enough to envelop the part affected, having been moistened with water, the salt employed is sprinkled in powder freely on the spongy surface: it is then applied to the part, and secured with a roller. In numberless instances, by this simple treatment, he has witnessed the most palpable and instant relief to the local inflammation. Constitutional remedies were employed at the same time, but the relief was proved to be due to the saline applications, by the fact, that where several joints were affected, only those were relieved to which the salt was applied. At the end of the paper the author gives an abstract of seventy-nine cases of acute rheumatism, showing the results of treatment, and other particulars.

[After the reading of Dr. Basham's paper, at the Royal Medical and Chirurgical Society, Dr. H. Bennet mentioned the success which had followed M. Gendrin's use of the remedy under discussion; after which]

Dr. Basham said, that in only two cases had he treated the disease by nitrate of potash alone. The acute, inflammatory symptoms usually gave way on the third or fourth day; and it was important to state, that in no one case treated by the nitrate of potash had there been any relapse. This was a strong recommendation of the value of the treatment, when we recollected how common relapses were, when the other modes of treatment were employed. In the first instance, he had given as much as four ounces of the salt in the twenty-four hours, but he had now reduced the quantity to one or two ounces in that period. A great quantity of the salt escaped by the urine, the quantity of which was not much increased, but its specific gravity was a great deal higher, averaging between 1030 and 1040. This increase in the specific gravity he considered was due to the potash.

Dr. C. J. B. Williams did not think this increase in the specific gravity of the urine was due to the nitrate of potash; but regarded it as the result of the elimination of urea and the salts of lithic acid from the system. This, or an increase in the quantity of the urine, was a circumstance which obtained when elimination was treated by other remedies. The result of his own experience by another treatment, that by salines and colchicum, with blood-letting when necessary, was, that convalescence usually took place from the third to the sixth day, and a cure was effected in from two to three weeks, according to the severity of the case. Feeling doubtful, at one time, as to the relative effects of the salines and colchicum on the disease, he determined to treat some cases entirely by the former, and, with this view, gave, in sub-acute rheumatism, the carbonate and tartrate of soda freely every two or three hours, until four or five drachms were given in the day. These remedies mitigated the pain and fever, but the rheumatism continued, although the salines were unremittingly persevered in for ten or twelve days. Colchicum was then added, and in three days the pain was gone, the specific gravity of the urine becoming, at the same time, much higher, from the presence of urea and the lithates. It was remarkable, too, that the urine often retained its acid property, even in cases where the perspiration was acid. *Lancet, Nov. 24, 1845, p. 588.*

8.—ON MUSCULAR RHEUMATISM.—By M. VALLEIX.

The essential character of this affection is *pain*, and no anatomical lesion belongs to it, unless it becomes complicated with other affections. It possesses various analogies with neuralgia, and the two affections may be easily transformed into each other. If the pain remain concentrated in the nerves, we find isolated, characteristic, painful spots—a *neuralgia*, properly so called. If it spread to the muscles, the contractions of these are especially painful, and *muscular rheumatism* is present; while, if it extend to the skin, we have a *dermalgia*. All these forms of the same affection may unite together, or by two and two.

The *diagnosis* of *acute* muscular rheumatism from inflammation is generally easy, owing to the absence of the well-known signs of the latter. It becomes more difficult when the muscles over a joint are those affected; and on no account can the identity of muscular and articular rheumatism be admitted. In respect to its diagnosis from neuralgia, it may be observed that it is much more rare to mistake a rheumatism for a neuralgia, than the reverse. In rheumatism, the pain and tenderness are more diffused, and are found rather at the attachments of muscles than in the course of the nerves. Muscular action causes an amount of suffering altogether disproportionate to the other spontaneous or excited pains; while in neuralgia the reverse is generally observable.

Prognosis. *Chronic* muscular rheumatism is more obstinate than chronic neuralgia; while exactly the reverse is true of the *acute* form. However severe, it is rare to see it continue longer than a week; while neuralgia may persist, with all its original severity, for weeks or months. Rheumatism is generally a far less serious affection than neuralgia; it does not produce the same perturbation of the economy, and is more easily dissipated. The same is true of the *chronic* form, for we only now and then see paralysis of one or several muscles result; while the subject of neuralgia not unfrequently continues to lead a miserable existence, deprived of the use of his limbs.

Treatment. These two diseases have too often been treated alike, and with great mischief to the subjects of them; for, while bleeding may benefit rheumatism, it is very hurtful to neuralgia; and flying blisters and intercurrent cauterization, so useful in acute neuralgia, are of little avail in rheumatism. In *chronic* cases, hydrotherapeia, shampooing, and thermal waters are more useful in rheumatism than in neuralgia; but in this stage the treatment of the two diseases approximates much more than in the acute one.

Among the different species of muscular rheumatism may be noticed that which affects the *muscles of the head;* sometimes the occipito-temporal, the masseters, or temporals, and at others the muscles of the eyes or cheeks being those which suffer. This pain is distinguished chiefly by the exacerbation which is produced by causing the sudden movement of the muscles affected; furnishing a far stronger contrast with the spontaneous pain than is the case with other pains of the head, as well as by being limited to the muscles in question. This form best yields to the external application of the *cyanide of potassium;* and of all forms of cephalalgia, it is that which is least benefited by blistering the nape, so indiscriminately resorted to. This rheumatism of the head is found, also, generally worst on rising in the morning, especially in *moderately* cold and damp weather. This is attributable to the parts having been exposed to the cold during the night (from which they would have been protected in *very* cold weather), and the simple precaution of covering them with a cap or handkerchief has not unfrequently relieved pains which have long obstinately persisted.

Besides a *torticollis*, rheumatism may show itself in the cervical region in the form termed by the author *cervicodynia*, in which there is a very variable amount of dull pain felt along the cervical region, and even extending to the epicranial muscles. It is much aggravated by stretching the head

backward, or keeping it bent forward. It is easily transformed into a neuralgia, and may become confounded with this, as it may with congestion of the brain, when it extends to the pericranial muscles. The most successful means are sea-water baths, cold affusion, cupping, and acupuncture. When the affection becomes chronic, it is very obstinate.

One of the most obstinate forms of muscular rheumatism, as also one of the most important, as it may lead to *paralysis of the deltoid*, is *rheumatism of the muscles of the shoulder*. In its acute form, it is distinguished with difficulty from articular rheumatism, or acute arthritis. In its chronic form, it sometimes induces the abovenamed paralysis. Several cases are related by authors, in which paralysis supervened on painful affections of the shoulder; but these are, for the most part, too imperfectly reported to enable us to judge whether this arose from chronic muscular rheumatism or inflammation. Others are more explicitly detailed, and two of these are quoted by the author, in which acupuncture, after the failure of other remedies, effected a cure.—*Bulletin de Thérapeutique*, tom. xxxv., pp. 296–307, 385–96.
Brit. and For. Med. Chir. Rev., Jan., 1849, *p.* 265.

9.—ON THE ACTIONS OF MEDICINES ON THE SECRETING AND EXCRETING ORGANS.—By Dr. A. B. Garrod.

The function of the excreting organs is to remove from the system matters produced during the metamorphoses of the tissues and food, and which are no longer of any service in the animal economy. Now we know that during life changes of an oxidizing character are constantly taking place, the ultimate effects of which are much the same as if the tissues had undergone ordinary combustion, which, however, is not of a perfect character, for the carbon and hydrogen are not entirely converted into carbonic acid and water; these elements partly assuming the form of less oxidized compounds; and again, the nitrogen, although it is mostly thrown out as urea (hydrated carbonate of ammonia), yet it is also eliminated as uric and hippuric acids, kreatine and kreatinine, &c. These various products of decomposition are removed from the system by different channels, some of the excreting organs separating chiefly the nitrogenized, others the carbonaceous compounds, &c. In health there are removed,—

By the lungs	Carbonic acid. Water.
By the skin	Water. Carbonic acid (a little). Nitrogenized matters containing urea.
By the kidneys	Water. Urea. Uric acid. Hippuric acid. Kreatine and kreatanine. Colouring matters, &c. Fixed salts.
By the liver & intestines.	Real bile afterward (reabsorbed). Bile pigment. Cholesterine, &c. Indigestible matters; peculiar secretion from intestinal canal, &c. — Fæces.

We have already seen that the perfect performance of the functions of these various excreting organs is of the greatest importance, and that many diseased states of the system may arise from their defective action; thus, if the kidneys become injured, and urea, &c., accumulate in the blood, then dropsical effusions, affection of the brain, &c., may arise.

Again, if the action of the liver is stopped, the bile pigment not being

thrown out accumulates, and seeks other means for its discharge, giving rise to the yellow skin, dark-coloured urine, &c., symptoms known by the term jaundice. If the lungs are unable, from any cause, to perform their function, apnœa takes place, from the inability to obtain oxygen, but partly, also, from the retention of carbonic acid in the blood, and so on with the other excretions. Many remedies which we are in the habit of administering are found in these various excretions, having first been absorbed from the stomach into the blood; in some instances, these agents pass out in the state they were administered; in other cases, they become altered by the action of the blood, and are eliminated in a modified form. Many of the substances which have been found in the urine, &c., have escaped detection in the blood; no doubt this has arisen partly on account of the difficulty in detecting substances in this fluid, and partly, also, from the extreme facility with which they are removed by the excreting organs. Certain bodies, however, have been discovered in this fluid, amongst which I may mention, iodine, mercury, baryta, cyanide and sulphocyanide of potassium, hydrochlorates of ammonia, indigo, rhubarb, musk, camphor, &c.; several substances have also been found deposited in the solids as mercury and madder in the bones, silver in the skin, copper in the liver, lead in the brain, spinal cord, and muscles. The kidneys appear very active in removing from the blood matters which are abnormal to its constitution, and the substances which, after their administration, have been detected in the urine, are very numerous, as they have been more sought for in this fluid than in any other excretion.

Some substances are found in the urine in an altered state, and the nature of the changes which they undergo is exceedingly interesting. For example the salts of the vegetable acids, as the alkaline tartrates, lactates, acetates, malates, &c., are decomposed in the system, and eliminated as carbonates of the bases; this change is effected by the oxidizing action of the system, and during their metamorphoses they probably produce some change in the respiratory process; hence, also, the influence which even acid fruits, as oranges, lemons, &c., possess in causing an alkaline condition of the urine, the acids being decomposed into carbonic acid and water, and the carbonates only escaping through the kidneys. Certain other acids undergo a different kind of metamorphoses—for example, benzoic and cinnamic acids; these are not broken up into carbonic acid and water, but, by uniting with other matters found in the blood, are capable of forming an acid which is a normal constituent of the urinary excretion. When benzoic acid is taken into the stomach, and the urine passed during the next five or six hours collected, it is found to contain, not benzoic acid, but in its place hippuric acid. The amount of hippuric acid exceeds that of the benzoic acid administered. Mr. Ure, who first observed this change in the human subject, thought that the benzoic acid in its passage destroyed the uric acid, and by assuming its elements, became converted into hippuric acid; but when repeating the experiment, found this to be an error, for the amount of the uric acid in the urine remained the same before and after its administration.

By the use of these bodies as remedies we produce a very acid condition of urine, enabling this fluid to hold in solution a large amount of phosphatic salts; and hence, in some cases where these are deposited, it proves a useful therapeutic agent. A case illustrating this occurred recently under my care in University College Hospital. A woman suffering from slight paraplegia was voiding urine, alkaline in reaction, and which deposited so large an amount of phosphates, as frequently to occupy half the height of the fluid in the glass. The administration of the usual remedies, as nitric acid, Pareira brava, &c., did not produce any effect on this condition of the urine; but when benzoic acid was given in large doses, (two scruples four times a day,) the phosphatic deposits soon became lessened, and in a few days entirely ceased; the urine also at the same time became acid

when voided, and did not very readily undergo decomposition. When the remedy was discontinued the abnormal condition of the urine did not return. In such cases it is probable that the benzoic acid not only imparts to the urine the power of holding the phosphates in solution, but acts also by stimulating the mucous membrane of the urinary passages, and correcting the secretion of an abnormal mucus, which often serves as a ferment, and causes the decomposition of the urea into carbonate of ammonia. *Lancet, Dec.* 30, 1848, *p.* 700.

10.—ON THE TREATMENT OF CANCEROUS GROWTHS.—By Dr. J. H. Bennett, Professor of Medicine in the University of Edinburgh.

In the chapter on the rational treatment of cancerous and cancroid growths, Dr. Bennett considers—1. the means of retardation and resolution; 2. the means of extirpation; and 3, means of prevention. The growth of cells in animals and vegetables is favoured by an elevated temperature, a proper supply of moisture, room for expansion, and certain localities; and, on the other hand, is retarded by excessive cold, dryness, want of room, and unfavourable positions. Now as cancerous and cancroid tumours chiefly or entirely advance by the development and growth of cells, by placing the affected part under the circumstances unfavourable to cell development and growth, their progress may be retarded or arrested. The direct application of cold, therefore, when circumstances will permit of it, may be employed with this view. The cutting off the usual supply of fluids for a time, by the ligature of the arteries leading to the morbid growth, has also in some cases been apparently attended with good results. Pressure steadily and effectively applied. has, according to some practitioners, been used with excellent results. The apparatus invented by Dr. Neil Arnott, figured and described by Dr. Walshe, or that more recently invented by Dr. James Arnott of Brighton, with which external cold and dryness may be combined, seem the best fitted for carrying this mode of treatment into effect. The means of extirpation are: 1. The excision of the part; 2. Chemical agents which destroy texture.

It is well known that many surgeons, discouraged by the frequency of the recurrence of cancerous diseases, feel indisposed to remove them by operation; the more especially as they believe that, in many cases, it hastens the fatal termination. Other surgeons, again, take a more favourable view of operative interference; and, believing that they have excised growths undoubtedly cancerous, which have never returned, and that in other cases, though ultimately unsuccessful, they have relieved the patients from much present suffering, and have thereby prolonged life—advocate having recourse to excision. One of the arguments usually urged by those who are averse to excision, in most cases, has been, that it is barbarous to subject the patient to an operation, often very painful, when we have little hope of its being useful—is now, in a great measure, removed by the late discovery of the anæsthetic effects of ether and chloroform, especially the latter. No doubt the imperfect methods, hitherto almost generally practised, of distinguishing between cancerous and cancroid growths accounts, in a great measure, for these discrepant conclusions of practical men. Dr. Bennett, after alluding to the successful results that have, in some cases, followed the excision of morbid growths—proved by the microscope to be cancerous—expresses himself in the following terms: "In like manner, by operating at an early period in all cases of suspected tumour, and keeping careful records, both of the minute structure (of the parts) removed, and of the ultimate results, much advantage would be gained to surgery. Lastly, by boldly excising all cancerous growths within his reach, when, after careful investigation, the surgeon has satisfied himself that no internal organ is affected, and repeating the operation so long as the return of it is merely

local, *I* feel persuaded that not only in many cases would life be prolonged, and much suffering saved, but that some might be permanently cured. If this applies to cancerous, it doth so with ten-fold force to cancroid growths, which everything that we know warrants us in asserting are much less fatal and malignant."

In discussing the "means of prevention," after pointing out how little confidence is to be placed in the internal remedies which have been recommended for correcting that unknown predisposition in particular individuals, to cancerous exudation, he throws out some general views for regulating the constitutional treatment of cancer, founded upon the difference between tubercular and cancerous deposits, which he, however, admits are purely hypothetical. As Vogel states (*Pathological Anatomy of the Human Body*, p. 290), carcinomatous structures are distinguished from tubercular, by their higher organization. Dr. Bennett argues that in proportion as the power of cell-growth increases in cancerous growths, they abound more and more in fat, this excessive cell development must be materially modified by diminishing the amount of fatty elements, which originally furnish elementary granules and nuclei; and that a tendency to the formation of fat would seem, *a priori*, to be opposed to the cancerous tendency. "If a tendency to fat be an antidote to tubercle, as I believe it is, spareness may possibly be considered opposed to cancer. In the one case, we should do all we can to bring the nutrition up to, and above the average; in the other down to, and below it." This plan of treatment does not preclude the endeavours to invigorate the general health by exercise and attention to the secretions and excretions. We might not have noticed such prophylactic suggestions, from their being so extremely hypothetical, were it not that our deplorable ignorance regarding the constitutional treatment, both empirical and rational, of cancerous affections, induces us to listen patiently to speculations regarding it, which, in other circumstances, we would not be inclined to tolerate.

The profession is much indebted to Dr. Bennett for this valuable contribution to our knowledge of the microscopic structure of cancerous and cancroid growths. It bears ample evidence of his great zeal, industry, and success, in pathological researches.

London Jour. of Medicine, March, 1849, *p.* 248.

II.—ON THE USE OF NITRE IN PURPURA HÆMORHAGICA, &c.—By Dr. C. Carlyon, Physician to the Cornwall Infirmary.

[Dr. Carlyon was led to the employment of nitre in purpura hæmorrhagica, from high encomiums passed upon it in Dr. Parr's "Medical Dictionary," as a medicine in cases of hæmorrhage. It is to passive hæmorrhages, that the remedy is more especially applicable.]

By passive hæmorrhages, observes Dr. Carlyon, I wish to be understood to mean cases where the inflammatory action has either been subdued by depletion, or has not appeared to precede the hæmorrhagic condition. It is not, however, in these cases that I consider nitre entitled to any exclusive preference, but only in such cases pre-eminently as partake of the character of purpura—cases in which the blood is supposed to be in a dissolved and supercarbonated state; thin and ichorous, as in malignant fevers, in contagious dysentery, in cholera, in purpura, and in sea scurvy. For the general argument in support of this extensive view of its use, I must refer to a report, by Mr. Charles Cameron, to the Navy Board, relative to its astonishing efficacy in scurvy, and to my own letter in the London Medical Gazette, Vol. VIII.

Discrimination, and the occasional interposition of purgatives, such, in particular, as combinations of rhubarb with carbonate of soda in full doses, will, nevertheless, be found indispensable; and when purpura hæmorrha-

gica supervenes, as it sometimes does, on a plethoric habit, even abstraction of blood, as a precursory measure, may be required. The diet should be the lightest possible, cold barley-water, or gruel, is the most appropriate. With respect to the best mode of exhibiting the nitre, I may repeat what I formerly said, viz., "that it has agreed best when given with an equal quantity of sugar, in cold water, in doses of from ten grains to a scruple, every two or three hours, and, in urgent cases, still more frequently. In the mild ordinary cases of purpura simplex, the repetition of the dose three times a-day will be sufficient."

Mr. Cameron's dose in sea-scurvy was one drachm, with which he recommends vinegar and water as a drink, but this is a larger dose than the stomach will ordinarily bear; still it is impossible to lay down any rule for the extent to which nitre may be given in any particular case, and it may be said generally, that, as long as the stomach is not offended, there is no danger of excess. I have often, on the other hand, found five-grain doses enough. In the progress of convalescence, it will be well to make camphor mixture the vehicle of the nitre, and ultimately to substitute carbonate of soda for the nitrate of potass, in a ten-drachm draught of camphor mixture, to be taken twice or thrice daily for some time. This, with a gradually improved diet, will supply the place of all other tonics.

Prov. Med. and Sur. Jour., Dec. 13, 1848, *p.* 682.

12.—ON A REMARKABLE FORM OF ANÆMIA.—By Dr. Addison.

[At a meeting of the South London Medical Society, Dr. Addison described a form of anæmia which has not hitherto attracted much attention. It affects adult males, and comes on most frequently in an insiduous manner.]

Its approach is first indicated by a certain amount of langour and restlessness, to which presently succeed a manifest paleness of the countenance, loss of muscular strength, general relaxation or feebleness of the whole frame, and indisposition to, or incapacity for, bodily or mental exertion. These symptoms go on increasing with greater or less rapidity: the face, lips, conjunctivæ, and external surface of the body, become more and more bloodless, the tongue appears pale and flabby; the heart's action gets exceedingly enfeebled, with a weak, soft, unusually large, but always strikingly compressible pulse; the appetite may or may not be lost; the patient experiences a distressing and increasing sense of helplessness and faintness; the heart is excited, or rendered tumultuous in its action, the breathing painfully hurried by the slightest exertion, whilst the whole surface bears some resemblance to a bad wax figure: the patient is no longer able to rise from his bed; slight œdema perhaps shows itself about the ankles; the feeling of faintness and weakness becomes extreme, and he dies either from sheer exhaustion, or death is preceded by signs of passive effusion or cerebral oppression. With all this, the emaciation or wasting of the body, though sometimes considerable, is not unfrequently quite disproportionate to the failure of the powers of the circulation—relaxation and flabbiness, rather than wasting of the flesh, being one of the most remarkable features of the disorder.

Dr. Addison next proceeded to give the details of several cases which had fallen under his own immediate observation. In only two of these did the patients recover: the one, a man below the middle period of life, who was looked upon as past all hope, and suspected to be suffering from some latent malignant disease, slowly but steadily recovered under the free use of brandy, but with the singular result of the hair on one side of his head turning permanently grey, whilst the other retained its original brown colour. The second case of recovery occurred in a gentleman above middle age: it was by no means far advanced, but was sufficiently well marked to excite alarm. He left his business, quitted London, and sought recreation in the

country. After a time he returned, and appeared to have shaken off the disorder entirely. In three cases only was there an inspection of the body after death, and *in all of them was found a diseased condition of the supra-renal capsules*. In two of the cases no disease whatever could be detected in any other part of the body. Dr. Addison inquired if it were possible for all this to be merely coincidental? It might be so, but he thought not, and making every allowance for the bias and prejudice inseparable from the hope or vanity of an original discovery, he confessed that he felt it very difficult to be persuaded that it was so. On the contrary, he could not help entertaining a very strong impression that these hitherto mysterious bodies —the supra-renal capsules—may be either directly or indirectly concerned in sanguification; and that a diseased condition of them, functional or structural, may interfere with the proper elaboration of the body generally, or of the red particles more especially. At all events, he considered that the time had arrived when he felt himself warranted in directing the attention of the profession to these curious facts. In thanking the Society for the patient hearing with which they had favoured him, he ventured to bespeak their interest not only in regard to the anæmia he had described, but also in cases of purpura, and some of the more anæmiated forms of chlorosis in the female, which he could not but regard as being more or less allied to the morbid state to which he had directed their attention. Indeed, not only had he found the anæmia in question occasionally occurring in connection with purpura, but had observed in cases of the latter disorder certain local symptoms which pointed somewhat significantly to the seat of the supra-renal capsules; whilst the bloodless and waxy appearance of certain chlorotic females bore so close a resemblance to the anæmia described, that it was difficult not to suspect the existence of something common to both. *Med. Gaz.*, *March* 23, 1849, *p.* 518.

13.—ON THE RELATION BETWEEN ANÆMIA AND GOITRE.—By Dr. James Begbie.

Dr. James Begbie, of Edinburgh, has communicated a very valuable memoir, with the above title, to the *Edinburgh Monthly Journal* for February, 1849, p. 495. The author proposes to answer the question,—"*Are Anæmia and Goitre related?*" by a review of cases which have come under his own observation: but he introduces them by some general statements, strongly tending to confirm the idea that the two affections are related. He states, for example, that in countries where bronchocele prevails in an endemic form, the exsanguined countenances, protuberant eye-balls, and other signs of bloodlessness manifested by those affected with the bronchocele, render it probable that both are effects of the same cause—anæmia.

Bronchocele, we are also told, develops itself rapidly during confinement in childbed, and undergoes a temporary augmentation during the flow of the menses. Dr. Parry has often seen goitre follow functional disorders of the heart,—disorders known to depend very frequently on deficient sanguification. It is a form of the *hydropthalmia* of systematic writers—perhaps that form of dropsy denominated *buphthalmus*, or *ox-eye*, which accompanied the enlarged thyroid gland as a concomitant symptom of anæmia, in the cases related by Dr. Begbie. He found this enlargement of the globe of the eye, the result of congestion and effusion, intimately connected with that condition of the system in which the blood is deficient in fibrin and colouring matter; and yielding to a plan of treatment adapted to such a state.

[This treatment consisted in the use of carbonate of iron with aloetic purgatives, and soothing doses of hyosciamus; with sea-side residence, full of diet of animal food, and exercise in the open air.]

With regard to the treatment of anæmia and its secondary disorders, Dr. Begbie makes the following remarks:—"Our first object, in the treatment

of anæmia and its secondary disorders, is to ascertain the exciting cause, and having arrested or removed this, to improve the condition of the blood by the free use of the preparations of iron, and a liberal allowance of animal food, unless there are complications of such a kind as to contra-indicate their use. Wine is seldom necessary, and generally hurtful; but porter or ale may be taken with advantage. A change of air, travelling and passive exercise, also do good. Persistence, however, is absolutely necessary both on the part of the patient and his attendant. *Iron*, the chief means of cure, in order to be effectual, must be continued for months, and perhaps, after an interval, again and again, renewed. It will not, however, disappoint our expectations; for whether it act by invigorating and improving the digestive and assimilative functions, or by restoring and augmenting the red particles of impoverished blood, there is really no remedy in the hands of the physician, whose virtues have been so thoroughly tested, and so deservedly recommended to our confidence and trust."

London Journal of Medicine, March, 1849, *p.* 273.

DISEASES OF THE NERVOUS SYSTEM.

14.—ON THE PATHOLOGY AND TREATMENT OF CONVULSIVE DISEASES.—By Dr. R. B. Todd, F.R.S., &c.

It will be necessary for me to state *in limine*, that under the general term *Convulsion* I include all those irregular actions of sets of muscles which are wholly unrestrainable by the influence of the will, and which are excited and kept up by a physical irritant.

Under this definition of the word convulsion I would refer to three distinct kinds of convulsions, each of which denotes a different cause, and is produced by an affection of the nervous system distinct in kind as well as in position. These are, the jactitating, or chorea-like, or choreic; tonic, or tetanic; clonic, or epileptiform.

[After a general description of these three kinds of convulsive movements, Dr. Todd proceeds to the subject of chorea. He observes:]

Of all the movements which accompany chorea, that of the tongue is the most peculiar and characteristic; indeed I would call it pathognomonic. The patient protrudes the tongue with a peculiar thrust to the fullest extent of which it will admit; frequently this is done by one effort, at other times it requires two or three attempts before it can be accomplished. And the subsequent retraction is also peculiar: the tongue is drawn back, supported and guided by the pressure of the teeth, and often very slowly and with great caution. Sometimes this peculiar mode of protrusion of the tongue is the precursor of the other choreic symptoms; and if we had frequent opportunities of seeing the cases very early, I have no doubt that this symptom would be found more frequently the harbinger of the more extensive affection. I have from this symptom only, been able to predict with accuracy that an attack of chorea was coming on.

[Paralysis frequently succeeds to the choreic convulsion. It sometimes precedes it, but it is then accompanied, Dr. Todd says, by the peculiar and pathognomonic thrust of the tongue. Dr. T. observes:]

That paralysis may occur in this way is evidently a fact of the highest practical interest, whilst it is not devoid of importance as bearing upon the pathology of the disease. Nevertheless I do not find it noticed in any of the descriptions of the disease in the practical works which I have consulted. The previous history of the case, the absence of any other symptom referable to the head, and the gradual mode of invasion of the paralysis, in addition to the peculiar mode of protrusion of the tongue, will always enable the careful practitioner to distinguish this paralysis from that caused by cerebral lesion. The heart is very frequently morbidly affected in cho-

rea; and this morbid affection shows itself, not in any disturbance of *the rhythm* of the heart, which, so far as my observation extends, never is disturbed, but in a derangement of its sounds. A bellows sound is frequently present, and is either aortic systolic, when it is almost always an accompaniment of the anæmic state of the patient, but *much more frequently* it is *mitral systolic or regurgitant.*

I am surprised that this feature of the clinical history of chorea has not attacted more general attention. It has been well known to me for many years, and I described it in the Croonian lectures on the pathology of rheumatism, which were given by me six years ago. But to my friend Dr. Addison, of Guy's Hospital, is due, so far as I know, the merit of having first made public the frequent occurrence of this bellows sound in chorea.

What is the cause of this sound? is it due to any irregularity in the muscular action of the heart? a choreic state of that, as of the external muscles, whereby the action of the valves is disturbed? or is it caused by a morbid deposit on the mitral valves, which prevents their precise action; or can it, like the aortic sound, depend on the anæmic state of the patient? I shall answer the last question first. The closure of the mitral valves is the result of the mechanical accumulation of fluid in the ventricle, which presses the valves towards the auricle, their tension being maintained by the chordæ tendineæ; this effect will be produced no matter what may be the nature of the compressing fluid; a mere colourless state of the blood cannot produce mitral regurgitant bellows sound; some imperfection, either of the valves themselves, or of their mode of apposition, must exist in order to produce such a phenomenon.

It is plain, then, that the bellows sound must be caused by some disturbance in the action of the mitral valves. What, then, produces the valvular derangement? Can it be any disturbance of the muscular action of the heart, any choeric state of the musculi papillares? I apprehend not; for as the closure of the valves is not accomplished by the action of the muscles, it would not be affected by any such irregular muscular action. Moreover, no such choreic state of the heart's action could take place without its being indicated by a disturbance of the heart's rhythm, which, of course, would be very readily detected.

Hence, then, we cannot resist the conclusion, that the mitral bellows sound in these cases is due to such an organic lesion as prevents the complete closure of the mitral valves during the systolic effort of the heart.

But now we are met with another question not less important. What can have created this morbid state of the mitral valves? It is rare to meet any symptom of heart affection, either preceding or accompaning the chorea; and the valvular imperfection is often overlooked, and only discovered by careful auscultation of the heart's sounds. The true answer to this question is, I believe, to be found in the fact that many of the patients who suffer from chorea are of a rheumatic diathesis, and that in consequence of this rheumatic state they experience an insidious endocarditis which generally affects the mitral valves.

[Turning now to the second class of convulsive diseases, Dr. Todd makes a few remarks on tetanus. The points to which he refers are tne little variation of the symptoms, the want of post-mortem appearances, and the curious fact of the endemic appearance of the disease. Respecting the cause of death in tetanus, Dr. T. observes:]

The tendency in tetanus is to death by exhaustion and asphyxia. The frequent return of the attacks of spasm, affecting all the muscles of the trunk, have a most exhausting influence upon the patient; and as the respiratory muscles, and even the muscles of the larynx, are generally more or less involved, the respiratory functions becomes seriously impeded. Hence, the most fatal sign is a rapid recurrence of the convulsive attacks, and the most auspicious sign is the prolongation of the intervals between them. Practically the disease should be regarded as one of extremely

fatal tendency, and therefore requiring the diligent interference of art to counteract its debilitating influence.

[Dr. Todd classes laryngismus stridulus with the tetanic diseases. He says:]

The features of this disease to which I beg your particular attention are these—

1. That the laryngeal spasms are truly tetanic, and occur in paroxysms: differing, however, from the ordinary tetanus in this, that a more complete relaxation of the muscles takes place in the intervals between the paroxysm, and that a considerable period often elapses before a recurrence of the paroxysm takes place.

2. As in tetanus the paroxysm is brought on by the sudden application of external stimuli as by a sudden draught of cold air, a start, by sudden mental emotion, by the attempt to swallow, so the same causes tend to produce the paroxysm in the laryngismus.

3. Tetanus sometimes does not extend beyond the muscles of the jaw and throat: this is more frequently the case with laryngismus, but very frequently in the latter disease the tetanic convulsion extends to other muscles; the muscles of the extremities become engaged, and the so-called *carpopedal* spasm is induced; the limbs being stiffened, the wrists flexed, the thumbs turned in, and firmly bent into the palm of the hand, and at the same time a similar condition of the ankle and foot, and an inversion and flexion of the great toe. With these there is generally well-marked opisthotonos, sometimes not extending beyond the cervical and dorsal regions, sometimes affecting the whole spine. During the paroxysm the child's consciousness is unaffected, and after its cessation the child returns to its previous state, appearing no otherwise changed than being more or less exhausted by the greater or less violence of the paroxysm.

4. Laryngismus does not manifest itself in robust and healthy children, but in children often weakly, but always in a state of depraved nutrition, from irregular and imperfect feeding, bad air, and frequently from the irritation of teething. A strong, healthy, well-fed child never exhibits laryngismus. Frequently the similarity of nervous constitution, as well as the mode of dieting of children in the same family, favors the development of the malady in successive brothers and sisters about the same period of infancy; and hence we often hear of instances of several members of the same family having been carried off in infancy by this malady.

5. There can be no doubt that under the continued operation of the exciting causes of the disease, laryngismus tends to a fatal result. It exhibits no spontaneous tendency to recover. Death takes place in some cases apparently from rapid asphyxia, much in the way it sometimes does in the cases of rapid development of œdema glottidis, or from the attempt to respire carbonic acid gas; generally the infant dies from exhaustion, brought on by the frequency of the paroxysms, and augmented by the injury to the respiratory function which each paroxysm causes. In such cases the mode of death is exactly as in tetanus. But in a third class the long continuance of the impaired nutrition generates a morbid state of brain, epilepti-form convulsions are superadded to the tetanic convulsion, and dropsy of the ventricles takes place, favoured by the retardation to the venous circulation which these frequent attacks occasion, and, also, sometimes, by the deposit of tubercular matter in the course of the venæ magnæ Galeni, which return the blood from the ventricles and the choroid plexus: and thus the patient dies with all the phenomena of hydrocephalus.

[Dr. Todd next speaks of epilepsy; and classes with it the convulsions of children, convulsions induced by the retention of urea in the blood, and puerperal convulsions. The latter are truly epileptic, but the convulsions of children have sometimes more or less of a tetanic character. Infantile convulsions are often caused by the presence of a morbid poison in the blood; and such cases as these form a connecting link with the convulsions of renal disease. Upon this subject, Dr. Todd observes:]

So excitable is the nervous system of children, that the development of a fever, especially if caused by the introduction of a poison, is very apt to be ushered in by convulsions, which sometimes prove fatal, and certainly will be more likely to prove fatal if the treatment be conducted with the idea of suppressing the present evil, neglecting to look to what the child has to undergo after the convulsions have ceased. All practical men are familiar with convulsions in connexion with the early development of small-pox, measles, and especially of scarlet fever. An artificial epilepsy may be produced by the administration of certain poisons; as the œnanthe crocata, conium, and prussic acid. In poisoning by this latter substance, the epileptic convulsions are frequently complicated to a very great extent with those of the tetanic kind.

These facts prepare us for the doctrine that the retention of certain important excretions in the blood, which their proper organs are incapable of eliminating, favours the developement of a state exactly resembling epilepsy in the phenomena of the convulsive fits. When the liver or kidney are in such a state that the elements of the bile, or those of the urine, are not separated in their normal quantity, the patient is very apt to have several convulsive fits, which often terminate his existence. Renal disease is a much more fruitful source of convulsions than hepatic, and the form of disease in which they are most apt to occur is in that small contracted kidney, which by some is regarded as a stage of Bright's disease, but, which, in reality, is a special morbid state of kidney, a chronic nephritis, frequently produced by gout, and, therefore, forming the finale of many a gouty patient's career, but often resulting from other causes. In this state of kidney, the gland has shrunk chiefly at the expense of the cortical substance; (the growth of epithelium (the immediate agent in the separation of organic products) is greatly impaired, many of the renal tubes are stripped of it, and no development of epithelium at all takes place in them. Hence, while in many of these cases water is freely eliminated, and even a diuresis takes place of an urine pale, and of low specific gravity, the organic products, urea and uric acid, accumulate in the blood, and act, especially the former, as a poison to the nervous system. Any state of kidney, however, if it be unfavourable to due elimination, may give rise to these symptoms; and accordingly I have seen them in that acute affection of the kidneys which is associated with inflammatory dropsy, and with dropsy after scarlet fever, to which my friend, Dr. Geo. Johnson, has given the appropriate name, *Desquamative nephritis;* and also in fatty disease of the kidney, where the accumulation of fat has taken place to such a degree as greatly to congest the Malpighian bodies, and to interfere seriously with elimination.

Medical Gazette, April 20, 1849, *p.* 661.

15.—ON THE PATHOLOGY OF CONVULSIONS IN CHILDREN.

[A writer in the British and Foreign Medico-Chirurgical Review, lays down the following propositions respecting the convulsions of children. He says:]

1. The first proposition we may lay down is that of Flourens, Magendie, and Hall, that no disease of the mere cerebrum, or disorder limited in its effects to that organ, or to the purely cerebral nerves, can induce convulsion; for no irritation confined to these parts can bring about muscular contraction. If disease or disorder, or so called irritation, commence in these parts, it must afterwards be propagated to, or its results there must affect the membranes, or the incident or motor nerves, or the medulla oblongata, before convulsions can arise.

2. Convulsions, either partial or general, may occur, and during the fit the child may die; yet after death no *visible* alterations, or organic lesions, or anatomical changes, can be discovered in the nervous centres, with

which such convulsions can be rightly and satisfactorily associated as an effect; nor has the child been known to have labored under any affection of other systems or organs, by which the centres may have been more immediately or secondarily affected, or with which they may have *sympathised*; nor have the incident or excitor nerves been known to have been exposed to such irritation, as might have produced the convulsions in the way of reflex actions. It is here then supposed that certain alterations, of a dynamic character, in the nervous matters of the centres, primarily arising there, are the cause of such convulsions, which are therefore of *centric* origin, a cause which is certainly not anatomically definable, but only assumable in its existence.

3. Convulsions, either general or partial, may occur, and the child may die in the fit; but after death, no morbid lesional changes are found to exist in the nervous centres, to which we can ascribe the disorder as an effect. We refuse to acknowledge that the cause of the convulsions had its origin in the nervous matter of the centres, or primatively affected it, because we know the child to have been exposed to irritants of the incident or excitor nerves; and we believe that these convulsions were caused by reflex spinal actions, and that the latter were the result of the irritation so produced. We believe, moreover, that the child laboured under no affection of any organ which could alter the proper relations of the vascular system of the brain with the nervous matter, or at least produce such an alteration which proves itself by an abiding and evident change to be witnessed after death. These convulsions are of *excentric* origin; and the only cause of them, down to which we can generalize, is the peculiar irritation to which we believe certain incident or excitor nerves have been subjected.

4. A child dies after having been convulsed. After death, more or less evident and important lesional changes and anatomical alterations are found in or about the nervous centres. These we believe sufficient to account for such convulsions, and we trace them to such morbid changes, &c., as their effect. We also affirm them to be caused by disease of the centres, because before their appearance there existed a greater or less amount of so-called "cerebral symptoms." We believe these cerebral symptoms, and consequently the disease of the centres, to have been of a *primary* character, that is to say, to have had their commencement either in the nervous or vascular apparatus contained in the cranium or spinal canal, and not to have followed as a secondary disorder upon a more or less acute affection of any other or more distant organ. These convulsions are of *centric* origin.

5. A child dies in convulsions. After death we may, or we may not, perceive such material changes in the centres as we may affirm to have been their immediate cause. If they exist, so far it is satisfactory; if not, we yet believe that *temporary* alterations were produced, either in the relations of the vascular system of the brain, &c., to its nervous matter, or else in the *sympathetic* relationships between the centres and other systems, organs, or structures of the body, by the previous existence of important disease in organs, &c., other than these centres. This we believe, because we know the child to have exhibited, for a greater or shorter space of time, other than "cerebral symptoms;" to have distinctly betrayed the existence of more or less acute disorder of distant parts. We therefore believe that such convulsions, or the disorder in the centres were not of *primary* character, not the result of disease having its primal origin in the centres themselves; but that they were of *secondary* character, a well marked and evident disorder of a distant part having at length drawn the brain—not at first disposed in itself to enter—into the general whirlpool of mischief. Such convulsions are yet of *centric* origin.

We believe that the above arrangement can be made to include all forms of convulsions spoken of by writers as occuring in children. But we must admit that it is very doubtful how far we may be permitted, as knowledge advances, to preserve all its various divisions. For example, it may be asked

if we are *now* justified in making such a class of convulsive actions as we should include in the characters of proposition 2,—a class having only *assumable* endowments. Are we warranted in believing that, in infants and young children, such purely and essentially *neurose* disorder can arise, or that the nervous matter of the centres can assume in itself any such diseased condition?—a condition independent of alteration or changes in its vascular system. It has been affirmed by some later continental writers that before the period of the first dentition, *essential* convulsions, such primitive neurose disorder as we have admitted, are things next to an impossibility; and Mauthner asserts that, even later in life it forms the exception to a great rule, when we are called upon to believe in their existence. According to Verson, "before an organ or system—causes of disease being present—can exhibit the development of a pure and special form of malady, proper to and proceeding from itself, it must be endowed with all those qualities which make it capable of the conflict: it must possess a completely developed organization, and through the latter be in a condition to react against those influences which are affecting it; do we find this to be the case with the *sensitive* sphere of life in the infant? By no means. In it predominates the *vegetative*, and that portion of the nervous system alone which is necessary for the carrying on of its functions. The ganglionic system is, therefore, developed relatively to such necessities.

The comparatively more perfect development of the spinal cord in children, with which the ganglionic system is in such intimate connexion, in relation to that of the brain, is one of the main reasons advanced by some later writers to account partly at least for the very great frequency of convulsion during infantile life. Dr. West remarks:

"The grand reason of their frequency is no doubt to be found in *the predominance of the spinal over the cerebral system in early life*. In the adult, the controlling power of the brain checks the display of those reflex movements, which become at once evident if disease heighten the excitability of the spinal cord or cut off the influence of the brain from the paralysed limb, or if even sleep suspend that influence for a season."

Brit. and For. Med. Chir. Rev., April, 1849, *p.* 416.

16.—ON PAROXYSMAL NERVOUS DISEASES.—By Dr. M. Hall, F.R.S., &c.

[In a former paper, Dr. Hall treated of what he calls *Trachelismus* and *Phlebismus*. In proceeding with this subject, he says:]

I will observe, in the first place, that the termination in *-itis* is become generic, and denotes the fact of the inflammatory character of disease. I think a similar use may be made of the termination in *-ismus*, which may be applied to another class of diseases, not inflammatory. We have, in this sense, strabismus, laryngismus, pharyngismus, cheirismus, podismus, &c.

The term *trachelismus* may be used to express that paroxysmal affection of the neck, in which, the muscles acting inordinately, the neck is affected with opisthotonos, or becomes twisted, or otherwise contorted; whilst the subjacent veins are subjected to compression, and the blood flowing along them is arrested or impeded in its course—a condition which may be aptly termed *phlebismus*. The term phlebismus may be regarded as generic, and each kind of this affection may have its appropriate and specific designation; and whilst the term *sphagiasmus* denotes compression of the internal jugular vein, that of *rhachiasmus* may be used to denote that scarcely less important event of interrupted circulation in the rachidian or vertebral vein. The former will be henceforth associated with paroxysmal apoplexy, paralysis, mania, &c.; the latter with the epileptic seizure, and other convulsions and spasmodic affections, the cerebrum and the medulla oblongata being affected respectively.

Trachelismus and phlebismus constitute one of the most important events in *pathology*, and especially in the pathology of the nervous system. Induced by mental emotion and excitants of reflex action, they are, in their turn, the fruitful source of *congestion* in the *cerebrum*, or in the *medulla oblongata*, and of *cerebral* and *spinal paroxysmal diseases*.

There is no *order*, no *degree*, in which the muscles of the neck may not act, and in which the veins of the neck may not be compressed; there is no form of cerebral and spinal paroxysmal derangement—from a momentary oblivium or delirium to coma or mania—from the slightest spasmodic or paralytic affection to epilepsy or hemiplegia—which may not take place as consequences of that compression. Having the limits of these maladies clearly placed before our eyes, we may readily imagine or comprehend the intermediate forms, mild, and dire, and we are prepared for their immediate observation.

[Dr. Hall thinks these views confirmed by the phenomena of strangulation, in which we observe first apoplexy, then epilepsy, and then asphyxia. He then proceeds to say:]

In my former paper I observed, it may be laid down as a principle, that there is no muscle—no set of muscles—in the neck, which may not become spasmodically contracted, singly, or conjointly with others; and that there is no vein in this region which may not, under the influence of such contraction of muscles, become compressed, and the course of whose blood may not consequently become impeded. As a further consequence, there is no organ which delivers up its blood to such vein, which may not be the seat of conjestion, and, if I may so express myself, of the apoplectic state. As a still further consequence, I may now add, that there is no paroxysmal affection of the nervous system, and especially of its *cerebral* and its *spinal* portions, however severe, however apparently slight, which may not result from this series of causes and effects.

This statement may be expanded into the different modes and forms of diseases of the nervous system, in their cerebral and spinal portions. Hence we have stupor, oblivium, cerebral epilepsy, vertigo, headach, delirium, flashes of light, muscæ, flocci, dimness, amaurosis in every degree, tinnitus, and other noises, dulness, deafness; neuralgia and other morbid sensations; paralytic affections; hence we have epilepsy, and every kind, mode, and degree of spasmodic and convulsive affection.

So far the efforts of *trachelismus* are *paroxysmal;* they supervene on emotion or harass of mind, and on excited reflex action, and recede completely. But there is a limit to this complete recession. At length the recession is incomplete. The effects of the congestive state of the veins are more or less permanent, in the form, generally, of slight paralysis. What is the precise condition of the intermediate blood-channels? and of the minute arterial branches and venous roots? Do they yield and dilate, as we sometimes see minute ecchymoses on the face? Is there lesion of their intimate tissue? Is there effusion? Is there ramollissement of the adjacent cerebral or spinal tissue?

In a word, it has been admitted, from time immemorial, that mental agitation and passion, and deranged condition of the stomach, liver, bowels, &c., induce apoplectic attacks. I only attempt, for the first time, I believe, to set forth the *rationale* of this pathological phenomenon. In doing this I establish a *Class of paroxysmal* diseases of the nervous system, cerebral as well as spinal; apoplectic and paralytic as well as epileptic and convulsive. I endeavour to fix the attention of physicians, and of patients too, on this, the *curable* stage of these dire maladies, before, from being merely paroxysmal derangement, they pass into permanent lesion of tissue.

This is *living* pathology as contrasted with the results of morbid actions as usually detailed in books, which are *dead*. If we read over the titles of each of the nine *Letters* of M. Lallemand, we find but a list of the capita mortua of the real and living disease. But what actions led to each of

these? This is *the* one question, with those of the diagnosis and of the treatment, which interests the physician and the patient.

Inflammation and its causes; venous congestion and its causes: certain conditions of the vascular system or its contents—as anæmia, plethora, the effects of alcohol; the tuberculous diathesis, diabetes, albuminuria, a syphilitic taint, &c.; the seat of the disease in the membranes, in the substance of the cerebrum of the spinal marrow; the character of the disease, especially as to its acute or chronic form, &c. I mention these circumstances to show how extensive a question that of the diagnosis is.

To return to the subject of trachelismus and of phlebismus, and of the paroxysmal affections of the nervous system, their effects, I must repeat that they exist in *two* stages; the first, that in which none but a functional change has taken place; the second, that in which physical lesion has supervened. The former case is the truly paroxysmal. These two conditions are coincident and commensurate with each other. As lesion supervenes, the symptomatic phenomena become more or less persistent; and here again the phenomena are proportionate to each other. In the severest form of this affection, physical lesion, perhaps rupture, may occur at once. It may be apoplexy or hemiplegia.

It would be interesting to institute a comparative estimate of the importance of inflammation and of the congestive state to which I have adverted, in regard to the nervous system. I believe the latter to be the most frequent cause of disease of the *substance* of the nervous centres, and its effects to be frequently mistaken for those of inflammation, which is the most frequent, but not the sole cause of affection of the *membranes*, chiefly arachnitis. This statement must be left to future observation for development. The idea is big with conclusions of the deepest interest.

The specific effects of impeded venous circulation, whenever this occurs in external parts, are sure to be *two*;—first, dilatation, or the *varicose* state; and secondly, *effusion of serum*. We may suppose, until further investigation has confirmed or corrected this view, that similar events occur in the nervous centres, leading to irritation or lesion of their structure. Rupture, or softening of their substance, may follow if the proper remedies be neglected.

I now proceed to discuss briefly the subject of the treatment.

The causes—all mental emotion, agitation, passion, must be most carefully avoided; all sources of gastric and intestinal irritation must be removed. I believe the most specific preventive to be systematic walking exercise, and especially a pedestrian tour. I am convinced that I have seen the best effects from a light mercurial conjoined with ipecacuan and squill and an aperient, taken so as gently to affect the mouth and act on *all* the secretions and excretions, the mercurial cachexia being prevented by air and exercise. The head should be kept cool by a lotion, consisting of one part of alcohol and three of water, the feet guardedly warm and dry. Sinapisms should be applied to the nape of the neck, extending to behind the ears. Dry cupping, and cupping with simple or crossed incisions, and with the detraction of the appropriate quantity of blood, have proved most useful.

But this is rather the treatment of the permanent effects of congestion. The most important treatment consists in avoiding the exciting causes of trachelismus, and its effects. It is obvious that, if we would save the brain, and save the intellect and limbs, we must deplete the veins.

We may now resume our subject, and observe that what shame does to the face, neck, and breast, through the contraction of the platysma myoides on the external jugular, other agitations and passions, and excitants of reflex action, effect on the cerebrum or medulla oblongata, or both, by the compression or obstruction of the internal jugular or vertebral. The former is *seen*, the other is *deduced* from the symptoms, consisting of paroxysmal, cerebral, or spinal seizures. If repeated, the cerebral or spinal veins, or the

intermediate blood channels between these and the arteries, become dilated or varicose, or yield an effusion or serum, whence persistent forms of the same diseases. Of these effects, the first should be subdued, the second should be averted, by timeous, that is, prompt, and effectual *cupping*.

Lancet, March 17, 1849, p. 285.

17.—ON THE IRRITABILITY OF THE MUSCULAR FIBRE IN PARALYTIC LIMBS.—By Dr. Marshall Hall, F. R. S, &c.

[At page 41 of our seventeenth Part, the reader will find an abstract of a paper by Dr. Marshall Hall, on the irritability of the muscular fibre in paralysed limbs. We beg now to subjoin some extracts from the paper published in the last volume of the Medico-Chirurgical Transactions. It will be remembered that Dr. Todd had arrived at conclusions on the subject of the irritability of paralysed muscles, quite at variance with those of Dr. Hall. The latter explains this circumstance by the fact that the machines used were of different kinds. Dr. Todd used the electro-dynamic, or magneto-electric apparatus; while Dr. Hall employed the common Cruikshank's battery. It might be supposed *a priori* that the results afforded by these instruments would be different, and Dr. Hall has shown by experiment, that they are in fact diametrically opposite]

In effect, as my friend Mr. Henry Smith, to whom I am indebted for his most able assistance in all these experiments, early and acutely observed, the galvanic trough is, from its simplicity of operation and its low intensity, really a *test of the irratibility* of the muscular *fibre;* whilst the electro-dynamic apparatus, from its extreme intensity and mode of action, displays the *power* of the muscular *mass*.

It may also be surmised, that whilst the simple current of low intensity acts principally on the superficial fibres, the reality repeated galvanic agency, in its intense form, may penetrate to the deep-seated *nerve*, and so display a degree of energy not observed in the other case.

That Mr. Smith's view of this question is the correct one, is proved by an experiment which I have repeatedly made. If the hands of a healthy person be subjected to the action of the electro-dynamic apparatus, they are energetically *closed:* the flexor muscles being more massive and powerful than the extensors, the former are more forcibly contracted than the latter; it is their *power*, not their *irritability* which is tested.

But it is to an actual case in point that we must appeal; and I beg here to introduce an experiment, made to determine the question before us, viz., that of results obtained by the two kinds of apparatus to which I have adverted. I give it in the words of Mr. Smith. It was made on the 10th of November, 1847.

"In a case of hemiplegia of three years and a quarter's duration, in a man aged 28, the arm being slightly wasted and the hand contracted, the leg only a little enfeebled, we first applied the current from the common Cruikshank's battery, the hands being placed in salt water in one basin, the feet in another: on using a small number of plates, the muscles of the paralysed arm were found to be slightly affected by the current which did not influence those of the unaffected arm; on augmenting the number of plates, both arms were moved, but the paralytic arm more than the other.

We now substituted Hearder's electro-dynamic apparatus for the Cruikshank's battery: both arms were moved, but the unaffected more than the paralytic arm, the muscles being more powerfully contracted, as observed both by the sight and touch; a difference which became still more obvious as the power of the apparatus was augmented."

Having thus pointed out the source of the discrepancy between the results obtained by Dr. Todd and myself, I need not proceed any further. Still there are so many and such important questions involved in this in-

quiry, that I am anxious to be allowed to adduce fresh evidence of the statements made in my former paper. Most of all, I would call the attention of the Society to the great physiological principles involved in this inquiry—viz., that, while volition is an exhauster of the irritability of the muscular fibre, this irritability is essentially dependent on the influence of the spinal marrow; and to the important application of galvanism as a test of that irritability, and as a diagnostic between the cases of paralysis, in which, first, the influence of the cerebrum, or, secondly, the influence of the spinal marrow, is severally removed; for both these doctrines remain in their full force.

The Terms Employed.—Before I proceed, I must also take this opportunity of defining the medical terms employed by me in this discussion. In the first place, by *cerebral* paralysis, I mean any disease which *severs* the influence of the cerebrum, and consequently the acts of volition, from the paralysed limbs. In the second place, by the expression *spinal* paralysis, I mean any disease which *severs* the influence of the spinal marrow from those limbs.

In my former memoir, I speak expressly of "the cases of paralysis arising from the severed influence of the spinal marrow, as distinguished from those arising from the severed influence of the cerebrum merely."

Cerebral paralysis usually depends upon disease of the cerebrum, but spinal paralysis may depend on disease situated in any locality even in the cerebrum, *so as to sever* the influence of the spinal marrow from the paralysed muscles.

By the term paralysis, too, I mean *pure* paralysis, and I carefully distinguish such paralysis from cases in which *spasm*, "excited immediately from some disease affecting the spinal marrow" (or system) "itself," is superadded; cases which I have recently distinguished by the term *spasmo-paralysis*.

It is especially necessary to distinguish between such cases, as from involving "some disease affecting the spinal marrow itself," are attended by *early* spasmodic affection, and those cases of pure cerebral paralysis, in which spasm supervenes at a remote period, from the physiological action of the spinal marrow on muscles from which the influence of volition being withdrawn, the irritability of their fibre is augmented and their permanent contraction induced, presenting the only case, probably in which such contraction is physiological, or pathological only in a secondary point of view.

It is true that Dr. Todd has referred the early and the tardy contractions in hemiplegia or cerebral paralysis to the operation of other causes, but it is equally certain that Dr. Todd's views are erroneous; for both experiment and observation prove that no condition of the cerebrum, *limited* in its influence to the cerebrum, *can* induce spasmodic action.

An equal, or, rather, a double error is committed by Dr. Todd in reference to the action of strychnine. It has been amply proved that strychnine acts on the spinal marrow, and only on the spinal marrow. Throughout this inquiry it is essential, not only that our instruments should be identical, but that our terms should bear a meaning at once specific and accurate.

The question submitted to fresh Experiment.—The questions now are:—

1st. Are there cases of paralysis in which the irritability of the muscular fibre is greater in the paralytic than in the unaffected part of the limb?

2d. Are there cases of paralysis in which the reverse of this obtains?

3rd. What are these cases severally and respectively? Are the former cases in which the influence of cerebrum *alone* is severed? and are the latter cases in which the influence of the spinal marrow *also* is intercepted?

4th. Is the galvanic battery or trough of Cruikshank, cautiously employed, a fair test of the irritability of the muscular fibre in paralytic limbs? and consequently, diagnostic of these two kinds of paralyses?

In the prosecution of these questions many precautions are required. In the first place, it will always be observed that the patient is timid on the

first application of the galvanism. The effect of surprise and sudden sensation, in wincing, starting, &c., must be carefully distinguished from that of the galvanic influence on the muscular fibre.

2. The degree of the galvanic force should never be, because it never need be, such as to give "pain," far less such as to "jerk the limb out of the basin." Such violence must complicate the phenomena, and confuse the results. The galvanic force should be the *mildest* which can produce an obvious effect.

3. The first effect of a paralytic seizure is one of shock, probably of diminished irritability of the muscular fibre. *Time* must be allowed for the restoration, as well as for the augmentation, of this property. It is, therefore, only after a certain lapse of time, that it is proper, or perhaps *safe*, to apply galvanism, especially if the patient be timid.

4. Within a very few days of the paralytic seizure, there is frequently a rapid and considerable recovery of voluntary motion; afterwards the recovery is both much slower and much less marked. The former is the recovery from *shock*, the latter diminution of the actual disease.

5. Lastly, in some cases there is *no* recovery. In these cases I think it probable that there may be no augmentation, perhaps no restoration, of the irritability of the muscular fibre. In one such case, after the lapse of seven weeks, the muscles of the paralytic arm remained less susceptible to the proper galvanic influence than the unaffected limb.

[Dr. Hall then relates several cases in which the galvanic current was used in diagnosis, by testing the irritability of paralysed muscles. In the first case, what had been supposed to be paralysis of the facial nerve, was shown to be cerebral paralysis, for the muscles of the paralysed side were more affected by the galvanic current than those of the sound side. In a case of real facial paralysis, the muscles of the unparalysed side were most affected. In another very interesting case of paralysis of one leg, the affection was supposed to be partial paraplegia, and therefore spinal; but on applying the galvanic current from Cruikshank's battery, the muscles of the paralytic limb contracted when no motion was observable in those of the sound limb. The paralysis was thus shown to be cerebral; and by close investigation of the case it was found that the patient had felt tingling of the hand on the same side as the paralysed leg. It is worthy of remark, that on using Hearder's electro-dynamic apparatus, the effects were reversed; the unaffected limb was jerked violently, when the paralytic limb was scarcely moved.]

Med. Chir. Trans., 1848, *p.* 149.

18.—OBSERVATIONS ON PARALYSIS.—By Dr. M. Hall, F.R.S., &c.

[In a discussion upon a case of Dr. H. Davies's, read before the Medical and Chirurgical Society, Dr. Hall made the following remarks. He said:]

Paralysis had been for ages aptly distinguished from hemiplegia and paraplegia, the former being, generally, not always, *cerebral* in its origin, the latter, *spinal*. But besides hemiplegia and paraplegia, there are cases of partial paralysis, arising from affection of the nerve of the part itself—an affection most frequently seen in the face; so that we have cerebral, spinal, and what might be termed neural paralysis. But all cases of *partial* paralysis are not affections of this nerve merely; for we may have partial hemiplegia, hemiplegia *limited* to the eyelid, to the face, to the arm, to the leg, &c. We may also, he believed, have partial paraplegia, or paraplegia limited to an arm or leg; though of this he was not so certain. This remark led him to the case before the Society—a case of paralysis of the two arms, and, as he understood, of the two arms only, the legs being unaffected. What could its nature have been? It is almost impossible to imagine disease of the spinal marrow so situated as to induce paraplegia of both

superior extremities, without involving in its effects the parts situated below. Paralysis of one arm, like paralysis of one leg, might arise from disease of the vertebra, so situated as to involve the immediately adjacent portion of the spinal marrow, or the origin, roots, or trunk of the brachial nerve. But how such disease could affect both brachial nerves, without involving the intervening substance of the spinal marrow, and so inducing paraplegia of the inferior extremities, it is difficult to imagine. He concluded, therefore, that Dr. Davies's case could not arise from disease of the vertebra, or it could not be one of half-paraplegia, using this term in its ordinary acceptation. What, then, was its intimate nature? There are two cases, one of which the given case may have been: the first is effusion at the base of the brain, slowly encroaching on the spinal canal, and compressing the roots of each brachial plexus. But this case is slow in its accession, and the case before us was more or less sudden. The second is of a totally different character. Sudden attacks of paralysis, of an arm, of a leg, or of both arm and leg of the same side, in children, are not very uncommon. They are generally preceded or accompanied by spasmodic or convulsive affection. He thought they were to be traced to dental, gastric, or intestinal irritation, acting, in a reflex manner, on the muscular system, and especially on the muscles of the neck, whence the veins of this region became compressed, and the nervous centres congested with blood, and there were coma and general convulsion. If such a state of things may occasionally leave one arm paralysed, it seems not difficult to imagine that in rare cases both arms may suffer the same loss of power.

Lancet, April 7, 1848, *p.* 475.

19.—ADDENDUM DR. TO MARSHALL HALL'S PAPERS.

The two principle causes of affection of the *circulation* in the encephalon and in the enrhachidion, if I may use that term, are—1, *Inflammation*, and 2, *Congestion*.

Everything leads to the conclusion, that inflammation consists in interrupted flow of blood in the blood-channels situated intermediately between the minute branches of the arteries and the minute roots of the veins, and its effects. Congestion consists in the interrupted flow of blood along the veins. The former probably depends on an altered physical condition of the internal surface of the blood-channels; the latter on compression of the venous trunks. There may be a point in which these two effects unite, in the latter case, when congestion may actually pass into inflammation. A diagram would best illustrate these two conditions.

The causes of inflammation act either immediately on the blood-channels, or through the medium of the *ganglionic system*; the causes of congestion, chiefly emotion and excitants of reflex action, act through the medium of the *spinal system*. I have thus treated of the *theory* of these affections; I now add a most important remark, bearing upon *practice*. It sometimes occurs that in the first instance, or in the midst of an apparent amendment, in dieases of the nervous system, a sudden retrograde change is experienced, for which no cause can be assigned. I have reason to believe that in such cases some paroxysmal affection has occurred in the night, or in the day, unobserved. This fact, if established by careful observation, will raise the veil from many a mysterious event, and probably lighten the blame which the ignorant are so ready to throw upon the physician, who, forsooth, in such cases of difficulty and danger, is rendered responsible for every untoward event, when he has, in reality, no more power to control them than the astronomer has to control the course of the stars. A passing emotion may induce trachelismus; this, in its turn, phlebismus; and this, the condition of the nervous centres, which, remaining after the attack itself is over, is the cause—perhaps the hidden cause—of the origin, relapse, or augmented malady of the patient. If this conjecture be just, how careful

ought our researches and inquiries to be pursued on such occasions! The pillow, the tongue, the shirt, and the sheet, should be carefully examined; and suffusion of the eye, and pallor, flushing, or lividity of the countenance, should not be overlooked. Frequently, the only evidence of an epileptic seizure having occurred during the night, is a wounded tongue, or aching limbs.

But the seizure may be so slight as only to leave some such cerebral symptom as confusion of intellect, or forgetfulness, or augmented excitability—events, the occurrence of which, however, it serves to explain. These hidden seizures, occurring in the night, or in the absence of witnesses, as they are the cause of many cerebral and spinal symptoms, enable us to explain many occurences which would remain enigmatical and mysterious. I cannot recommend the subject too earnestly for new investigation. Severe attacks, whether apoplectic or epileptic, unfortunately present no difficulty in the diagnosis. *Lancet, April* 14, 1849, *p* 394.

20.—ON CEREBRAL AFFECTIONS SIMULATING IMPENDING APOPLEXY.—By Dr. H. M. Hughes.

[After mentioning the hydrocephaloid disease of children, Dr. Hughes refers to a similar affection in adults. He says:]

Every practical surgeon of large observation, and every practical accoucheur of extensive experience, is well aware that giddiness, headache, dimness of vision, singing in the ears, throbbing of the temples, restlessness, sopor, and even the disposition, or approach to coma, are symptoms which occasionally follow extensive hæmorrhage as well as accompany plethora, or "determination of blood to the head."

We are reminded by Dr. George Burrows, that even Hippocrates observed that repletion and depletion of the vascular system were accompanied with similar symptoms of disturbance to the nervous centres. I shall quote a few well-authenticated instances, illustrative of this fact, many of which are mentioned by Dr. Marshall Hall, in his essay on Bloodletting, and taken from authors of high repute. "A lady" who had been cupped twice or thrice a week regularly, by a friend of Dr. Hall's, "was affected with extreme pain of the head, violent throbbing of the temples, slight delirium, and sickness, and the street was found covered with straw." These symptoms increased so much during the day, together with "feverishness and a frequent strong pulse, that it was apprehended inflammation had taken place in the brain. The arm was actually tied up for bloodletting, but the remonstrances of the patient, the history of the attack, and the recollection of some remarks on the loss of blood, read some years before, happily led to the abandonment of this measure." "Fortunately both for the patient and myself," says the relator of the case, "her repugnance to bleeding prevented me from using the lancet, and so saved her life. She earnestly requested to be allowed a little brandy; I gave it her: it obviously afforded much relief, and I began clearly to see the nature of the case." The lady recovered under "light cordials, mild diet, rest, quiet, and attention to the bowels."

Dr. Cooke, in his notes to Morgagni, gives instances of similar symptoms following extensive hæmorrhages, but refers them, as I believe incorrectly, to cerebral plethora.

"A lady, aged 25," says Dr. Abercrombie, "had been frequently bled on account of symptoms in the head which had supervened upon an injury. Considerable relief had followed each bleeding, but the symptoms had soon returned, so as to lead to a repetition of the bleeding, at short intervals, for several months." When Dr. Abercrombie saw her, "she had a death-like paleness, and her pulse was very rapid, and as small as a thread;" but still she complained of frequent headache, violent throbbing in the head, con-

fusion, and giddiness." "It was agreed, as a last experiment, to make a trial of an opposite system—nourishing diet, and tonics. In a fortnight she was restored to very tolerable health." The same author reports the case of a lady, who, after leeching, and other depletory treatment employed with benefit for a painful abdominal hardness following delivery, was, after three weeks, when reduced in strength, alarmed and agitated, and began to talk wildly and incoherently, and, "after a restless night, was in a state of high excitement, talking incessantly, screaming and struggling, with a wild expression of countenance, and a small rapid pulse." Leeches, cold applications, and purgatives, were employed, with little or no benefit. A full glass of white wine was afterwards given every hour, and after the fourth hour she was found composed and rational, her pulse 90, and of good strength, and from this time there was no return of the symptoms." He also observes, "that in the last stages of exhausting diseases, patients frequently fall into a state resembling coma; and I have frequently seen children lie for a day or two in this kind of stupor, and recover under the use of wine and nourishment. It is scarcely to be distinguished from the coma which accompanies diseases of the brain. It attacks them after some continuance of exhausting diseases, such as tedious and neglected diarrhœa." "I have seen in adults the same affection, though it is perhaps more uncommon than in children. A man, considerably advanced in life, in consequence of a neglected diarrhœa, fell into a state closely resembling coma." An elderly lady, from the same cause, had loss of memory, and squinting. "Both these cases recovered by wine and opiates: in the former, blistering on the neck was also employed." He adds the very remarkable case of a gentleman, about thirty years of age, who had been reduced to a state of extreme weakness and emaciation. As debility advanced he had become considerably deaf: and, "when I saw him," says the Doctor, "he was affected in the following manner:—He was very deaf while sitting erect, or standing, but when he lay horizontally he heard perfectly. If, when standing, he stooped forward, so as to produce flushing in the face, his hearing was perfect; and, upon raising himself again to an erect posture, he continued to hear distinctly so long as the flushing continued: as this went off, the deafness returned." Dr. Marshall Hall states that "he is persuaded that the loss of blood is by far the most frequent and influential source of delirium and mania occurring in the puerperal state." It is strange that, with such facts before him, so accurate and so close an observer as Dr. Abercrombie should not be led to doubt the truthfulness of the doctrines deduced from the experiments of Dr. Kellie, which experiments, imperfect and inconclusive as Dr. G. Burrows has shown them really to have been, appear entirely to have warped his judgment in reference to the cerebral circulation. Richter and Mr. Travers relate cases of amaurosis resulting from loss of blood; and the latter author says, "A country lad, of robust constitution, became the alternately favoured paramour of two females, his fellow-servants, under the same roof. He was the subject of gutta serena in less than a twelvemonth." He refers to another lad, who had palsy of retina as a consequence of secret indulgence. "When bleeding," says Sir Benjamin Brodie, "has been carried to a great extent, symptoms frequently occur, which in reality arise from loss of blood, but which a superficial observer will be led to attribute to the injury itself (concussion of the brain), and concerning which, indeed, it is sometimes difficult even for the most experienced surgeon to pronounce, in the first instance, to which of the two causes they are to be referred." Many quotations bearing upon the same point might be added; but it may be presumed that sufficient, and perhaps more than sufficient evidence has been adduced from authors of high repute, to show that a great variety of symptoms which are commonly, and, under certain circumstances, correctly considered to be indicative of the consequences of inflammation of the brain, or of oppressed cerebral circulation from repletion or pressure, may, and not unfrequently do accompany con-

ditions of the brain which are the direct reverse of these,—such as loss of blood, or anæmia and debility, from whatever cause arising. It is not within the scope of the present communication, which is of a purely practical character, to attempt to explain the proximate cause of this similarity of symptoms existing under circumstances diverse and even opposite. It is sufficient for me, I think, to have pointed out the circumstance, and to have advanced evidence from esteemed authors of the fact, for the purpose of an introduction to the observations which follow.

Many writers, and among others Drs. Copland, Holland, Watson, George Burrows, and Copeman, have recently insisted upon the injurious and even fatal consequences which may result from venesection in some forms of apoplexy; and have pointed out the obvious differences which exist in the symptoms, attendant circumstances, and pathology of that complaint, and the caution which should be exercised in its treatment. The validity of these opinions is now generally acknowledged. The indiscriminate use of the lancet—"that invariable refuge of the timid and the ignorant"—in all cases of apoplexy, would, it may be presumed, be advocated by few practitioners of experience. Notwithstanding this, the only notices with which I am acquainted, which appear to myself to have reference to the peculiar, but by no means uncommon affection to which I am anxious to direct the attention of the Society, are from the pens of Drs. Aberbcrombie, Holland, and Marshall Hall.

Dr. Crombie, at page 310 of his very valuable work, says, "I have repeatedly been consulted under the following circumstances:—

A gentleman accustomed to very full living is seized with an apoplectic attack, or with symptoms indicating the most urgent danger of apoplexy: he is saved by bleeding, and other free evacuations, and is kept for some time on a very spare diet. His complaints are relieved, and as long as he keeps quietly at home he goes on without any uneasy feeling; but when he begins to go abroad, he becomes liable to attacks of confusion and giddiness, generally accompanied with palpitation of the heart, and an uneasy feeling about the præcordia. His pulse is now soft and rather weak, and his general appearance indicates the very reverse of plethora; and these symptoms are removed by a cautious improvement of his regimen. This curious fact I have repeatedly had occasion to attend to in the treatment of cases of this kind, and it has always appeared to me to be one of very great interest in reference to the pathology of the brain."

The slight sketch here given must I think, be familiar to every observant physician of extended experience, as the subjects of it must be very frequently submitted to their notice. I might quote largely from Dr. Holland's paper on "Bleeding in Affections of the Brain," but I content myself with the following sentences:—"Little heed is taken of the many cases where the symptoms depend upon irritation alone, or on loss of nervous power, or on deficient circulation in the brain, or on altered qualities of the blood, or, it may be, on morbid changes in the nervous substance itself. Theory might suggest that in some of these various cases the loss of blood would lead to mischief. Experience undoubtedly proves it." "It is certain, indeed, that there is a state of brain best, perhaps, represented to us in its general effect of diminished nervous power, which tends to produce sometimes spasmodic seizures, sometimes delirious or maniacal affections, sometimes palsy of different parts of the body: these effects being in no wise obviated by depletion, but rather increased by all such means; while they are relieved by remedies which tend to excite the energy of the sensorium, and to augment the general power." "I have known many instances where bleeding has been repeated to remove the very symptoms which, it was next to certain, it had been the means of bringing on."

Dr. Marshall Hall writes, in page 31 of "Disorders of the Nervous System," "too great action of the minute arteries, congestion in the veins, an anæmious state of the vascular system of the encephalon, alike induce

morbidly exalted and impaired conditions of the mental and cerebral functions." The same author, in a paper "On the prevention and treatment of Apoplexy and Paralysis," published in the 1st volume (new series) of the "Transactions of the Medical Society of London," writes, page 188, "I have repeatedly been consulted by patients with a pallid and anæmious countenance who have been in a state of alarm by continual use of blood-letting, or application of leeches, whom an opposite course—especially a mild chalybeate—adopted and pursued with due caution and prudence, has rescued from this state of alarm, and of danger, too (for there is, as I have said, danger even of apoplexy and paralysis in a state of inanition), in a moderate time." Again, page 194, he says, "I repeat that it is not plethora alone which predisposes to the apoplectic and hemiplegic attack; and that the opposite condition of the system, whether it arises from the loss of blood by blood-letting, or hæmorrhage, or from defective sanguification, is not free from danger."

[Dr. Hughes gives the following as the considerations by which this affection may be diagnosed:]

1. The history of the case, and the particular circumstances under which the symptoms have arisen. 2. The general appearance of the individual. I think I have observed that the parties suffering from this affection are ordinarily either thin, pale, and delicate, as well as weak; or that, though short and stout, they are pale, flabby, and anæmiated. This, however, is far from being without exception, as I have seen persons suffering from it, who presented in many respects the very appearance which is popularly believed to be that peculiar to apoplectic subjects—viz., a short thick-set person, a short bull neck, and a red face. 3. The pulse is either small, frequent, and feeble, and is sometimes accompanied with the peculiar thrill of hemorrhage and chlorosis; or, though large and apparently full, is very soft and compressible. Unless the affection is accompanied with diseased heart or arteries, it is never full and at the same time hard and incompressible. The extremities are usually cold, sometimes numb, and not unfrequently purplish from a languid circulation; at other times they are soft, moist and flabby. The tongue may be loaded, but it is more frequently moderately clean, and more frequently still is morbidly clean, pale, expanded, and indented. 4. The symptoms generally affect the patient while walking, or while in the erect or sitting posture; are not increased, but on the contrary relieved by lying down; and are often, in fact, generally, most troublesome upon first rising in the morning. Ordinarily, though not universally, they are not increased by stooping. 5. No heaviness, and no increase of symptoms, is experienced after a full meal. The individual is usually well while in bed. 6. Depletory measures previously employed, though they may have apparently relieved the patient for the time, have been uniformly followed, *in a short period (in a day or two at most)*, by a recurrence and even an increase of the symptoms, and have usually been adopted without relief. 7. The patient has never found himself worse after a glass of wine or other stimulant, excepting perhaps from its immediate and purely stimulant effects; but on the contrary has usually been relieved, if indeed, he has ever ventured upon the experiment of taking it, or been allowed by his medical attendant to take it. 8. In some cases, but in some cases only, an anæmic murmur may be heard over the aortic, or rather (as I believe) over the pulmonary valves, and a continuous "humming," or "bruit de diable" (evidently producing *light* pressure of the stethoscope) over the *veins* of the neck. Whenever these symptoms are observed, when, that is to say, they truly exist, they constitute important aids to diagnosis, and equally important indications for the treatment necessary for the safety of the patient.

It is of importance to recollect that, before deciding upon a plan of treatment, the heart as well as the pulse should be always examined; and that the force of the two should be compared; otherwise serious mistakes may

arise, and injurious consequences may result; as the heart may be beating with unusual force, while the pulse is feeble, or the strength of both heart and pulse may be diminished, though serious organic disease may exist in in the former; and the brain may be seriously, gravely, and even dangerously oppressed with blood, though the impulse of the central organ of the circulation may be diminished.

[The treatment will consist in the removal of the cause, when practicable; the administration of tonics, especially chalybeates, and moderate purgatives to secure gentle and regular action of the bowels; good diet, fresh air, and moderate exercise. In very advanced cases direct stimulants will be needed. In cases which are of a doubtful nature, we should blister the nape, and purge, while we allow a generous diet; until we are able to ascertain the exact character of the affection.]

Medical Gazette, April 20, 1849, p. 671.

21.—ON A NEW REMEDY FOR EPILEPSY.—By Thos. Salter, Esq., F.L.S. Poole.

[This remedy is the expressed juice of the cotyledon umbillicus. The following is the case by which its virtues were tested :]

Miss G., the lady whose case is here referred to, is now 28 years of age. She was attacked with epilepsy, when on a visit to a relative in town, about fourteen years since. Her parents were both healthy persons, and it is not known that any member of either family suffered from the disease. She is of middle stature, fair complexion, somewhat stoutly made, and previous to her illness was of a lively and cheerful disposition, and in the uniform enjoyment of good health.

The relative with whom she was staying, being an eminent metropolitan surgeon, she had every advantage that medical skill and experience could afford her. Then, and subsequently, physicians of the highest character have been consulted on her case, and various modes of treatment have at different times been put in force, but all alike failing to produce any good result. The paroxysms continued to return at intervals, varying but little, from a month to six weeks, (but they occasionally occurred at the intervals of a week or fortnight) for a period of twelve years. At the end of this time she was strongly urged to try as a remedy the cotyledon umbillicus, by a person who stated that it had proved a cure in several similar instances of disease. Accordingly, two teaspoonfuls of the expressed juice were taken two or three times in the day, and this treatment has been persevered in up to the present time, during those seasons of the year in which the plant could be procured, from early in the spring till late in the autumn. From the time the patient commenced the use of this remedy she has had no return of the disease, (though up to that time it had continued with undiminished violence), not a single paroxysm having since taken place; and with the loss of the fits, every vestige of disease, both physical and moral, has disappeared. If this remarkable effect can fairly be ascribed to the means employed, it would be impossible to find stronger testimony for the use of any medicine whatever. There are no reasons for supposing that the happy change in the patient's circumstances was brought about by any other agency; her habits and mode of living were previously fixed, and no change was made in them at this time; they were always remarkably regular and uniform, and have gone on to the present moment without any interruption or variety. No medicine of any sort has been taken since the juice of the cotyledon was first resorted to. To suppose that the termination of the disease on taking the cotyledon was a mere coincidence, is a supposition beyond the ordinary course of probabilities, more especially as this was just one of those cases not likely to cease spontaneously, or to be cured by the unassisted operations of nature. It had existed twelve years,

and might, therefore, be thought to have established itself by habit; but there were strong grounds for believing that it had gone further than this, for *it* had produced some of those effects which we are wont to consider as the offspring of organic change. Her complexion, from having been fair and ruddy, had become sallow and opaque; she had also lost much flesh; the memory had become very defective, and she often expressed herself with incoherence; the temper, also, from having been remarkably amiable, was irresistible and uncertain.

The cotyledon umbillicus is stated by Withering to be a rare plant; its common habitation would appear to be that of old walls and rocks, but it grows abundantly in this neighborhood on dry sandy banks. For the information of those unacquainted with the plant, I would add that in the Linnean arrangement it belongs to the class decandria, and order Pentagynia, but in the natural classification it will be found under the order crassulaceæ. It is about six inches high; the leaves are succulent, fleshy, and peltate.* It flowers in June and July, in a long spike of blossoms, accumulated on one perpendicular flower stalk; the corolla is bell-shaped, and of a pale yellow colour; the stem or flower stalk is somewhat purplish, with a few small leaves at its lower part. At the time of flowering the leaves become thin and shrivelled, from yielding their juice to the stem and flowers.

The plant may be used as long as the leaves remain green and succulent, and every part of it be employed for the expression of the juice, with which the leaves, however, are the most abundantly supplied. The cotyledon is closely allied to the sempervivum and sedums, which also belong to the order crassulaceæ, and though now forgotten or obsolete as medicines, all three had at one period some reputation both as internal and external remedies.

[Four years after the above remarks were written, Miss G. is stated to have had no return of her complaint. Several other cases of cure have also come to the knowledge of Mr. Salter. The lady who recommended the remedy to Miss G., became acquainted with it by reading an article, said to have been written by the Rev. John Wesley, in an old number of the Arminian Magazine.] *Medical Gazette, March 2, 1849, p. 367.*

22.—ON PARAPLEGIA.—By Dr. W. W. Gull.

In paraplegia arising from lesion of the cord, whether the anterior or posterior columns, or the cord generally, be affected, there is greater loss of motion than sensation.

Very numerous cases are on record of pressure on the cord, from tumors, hydatids, &c., in all of which loss of motion accompanied loss of sensation, when this latter formed part of the symptoms; but I cannot find any cases of pressure or disorganization uncomplicated, in which the loss of sensation preponderated, or in which there was simple loss of sensation.

My attention has now for years been much given to *post-mortem* appearances; but I have not met with cases which controvert my position, nor are there amongst the numerous cases of lesion of the cord which are contained in the records of this Hospital, any which show that one part or column of the cord, when affected, is attended with anæsthesia without loss of motion, though the reverse often happens.

If it is admitted that these facts warrant the conclusion that seems to me fairly to flow from them, we have therein another argument in favor of the

* In collecting the leaves of the cotyledon umbillicus care should be taken not to confound it with an umbelliforous plant, the marsh pennywort (*hydrocotyle vulgaris*) which it somewhat resembles. I have known the mistake occur more than once. A view of the entire plant, and a knowledge of the locality in which it grows—the cotyledon always being found in very dry, and the hydrecotyle in moist places—will be conclusive.

zonal symmetry I advocate. If we admit that this spinal system, in its various segments, can act under the form of an excito-motor system, which necessitates continuity of action from incident to reflecto-motor nerve, we cannot, I think, even suppose in these segments two centres; one, namely, for receiving the impression from without, and the other for exciting the movement in the muscles. Nor does there seem to me any stronger grounds for admitting separate centres for motion and sensation in the brain than in the cord. How fallacious soever these remarks may be, yet the facts seem to oppose the assumption that there are such sensory and motor centres, distinct from each other.

In pursuance of my subject, I have next to call attention to these cases of paraplegia in which there is much greater loss of sensation than of motion; and, far from finding them contradictory of the former, or anomalous, they seem naturally to arrange themselves into distinct classes. Before treating of the two great divisions of such cases, I would observe, that in paraplegia from disease about the spine, the nerves, as they pass to the cord, are sometimes implicated, and we find, on a *post-mortem* examination, sufficient explanation of what, carelessly observed, might seem to be an exception to the rule laid down. Thus, in the case of the Count de Lordat, mentioned by Abercrombie, a paralytic affection of the left arm followed an injury to the neck from a fall, and the opposite arm became numb. On a *post mortem* examination, together with induration of the cord, there was a *compact and tendinous condition of the cervical nerves, owing to thickening of the membranes covering them.*

In some cases of disorganization of the spinal centres, numbness or other affection of the sensation may precede or accompany the disorganising process, and yet, even as the paralysis increases, the state of the sensation shall improve, and become quite normal. It would seem, from the similarity of such cases to the results of concussion of the spine, in which the sensibility returns after a few days, as if the onset of the local disorder produced the condition of concussion, destroying for a time the power of feeling, which, so soon as the first shock of the inflammation is over, returns again. This is strikingly exemplified in those gradually extending affections of the cord in which anæsthesia is the precursor of paralysis, and then disappears.

The first class of paraplegic affections, with preponderating anæsthesia, are peripheral, beginning as impressions on the extremities of the sensitive nerves; the muscular movements suffering subsequently. The efforts of modern physiology have been directed to the elucidating and setting forth the functional value of each particular part of our bodies; and its success has nowhere been greater than in regard to the nervous system. We no longer regard nerve as a mere conductor of an influence received from the spinal cord; it is in itself as active, according to its particular function, as the centre to which it is attached, or the muscle with which it is connected. The prevailing views in physics will find their way into every branch of natural study; hence we talked for a time of the nervous fluid, and there were theories to shew that the nervous fluid was probably a highly subtil one, allied to the electrical. But electrical fluids expressed no more than an hypothesis; and we now regard the conducting wire as so conducting by virtue of its active molecular forces. We alter its physical state, and we alter its power of conduction, and this reacts through the series. This great advance in physics has gone hand in hand with the discoveries in neuro-physiology. Nerve has the power of exciting muscle by virtue of its proper state of nutrition; this is proved by exhausting a nerve; after leaving it at rest for a time, it recovers itself, although previously divided from its centre. *Medical Times, March 24, 1849, p. 407.*

23.—AN ANOMALOUS CASE OF SPINAL AFFECTION.—By Dr. Golding Bird, F.R.S., &c.

[The following case occurred to Dr. Bird some years ago, and the account of it was read before the Physical Society of Guy's Hospital. The patient was a married lady forty-three years of age, who was in excellent health, and had never been subject to nervous or hysterical ailments. She was in affluent circumstances, and was free from any anxiety; her disposition was amiable, and her moral courage great. This lady received a bite from a gnat, as she supposed, a few inches above the right ankle; and this was followed in a day or two by great pain and swelling of the right leg and thigh, which bore the appearance of phlegmasia dolens. Under proper treatment this state slowly subsided, leaving behind it intense pain, apparently neuralgic, which was most severe in the tract of the sciatic and anterior crural nerves. In a few days the left leg became affected in the same manner as the right had been; and the same neuralgic pains remained on the recession of this second attack. When the extreme tenderness in the course of the nervous trunks had slowly subsided, which was about five weeks after the supposed gnat bite, another train of symptoms came on; and one week after this, viz., on the 19th of September, 1844, Dr. Bird was sent for. He tells us:]

I found her lying on her back in bed, with a remarkably cheerful expression of countenance, and slightly flushed face and hot skin,—both which appeared to be owing to a medical examination at midnight, rather than to disease, as they were replaced by a cool skin and rather pallid cheek, before I *left* her chamber. She spoke cheerfully, and generally with a smile, as was customary with her. Pulse 88,—generally, however, being but 70; tongue clean and moist. Seeing her thus cheerful, I took her hand; and in an instant a marvellous change came over her,—the hand was convulsively contracted, the arm jerked up with almost tetanic violence, the face assumed a hippocratic expression of anguish, and she uttered a scream of pain. Proceeding with my examination, I found that when lying calmly she was free from all pain; but the slighest touch of the limbs produced these tetanic convulsions, accompanied by intense pain in the spine. It was remarkable that *a gentle touch or fillip with the finger, produced these attacks with the greatest intensity,—a carefully applied and firm grasp causing but little uneasiness.* The sensibility of the arm to touch, was, however, far less than that of the *feet*. Here the touch of a feather was sufficient to produce convulsion more intense than I have ever witnessed, save in tetanus or hydrophobia; the legs and thighs becoming of an iron-like hardness, from the violent spastic contractions of the muscles, and the pain in the lumbar region of the spine being most distressing. Slighter spasms were excited in the muscles of the chest or abdomen, by a sudden touch or pressure of the integuments of these regions, provided it were applied below the mammæ; above this part, as well as on the face and neck, I was by no means satisfied that any morbid excitability existed. It was remarkable that when the arms were thrown into the state of spasm she always referred the pain to the upper dorsal region; and when the legs were convulsed, she complained alone of the sacro-lumbar spinal region. Ordinary sensation and motion appeared perfect, at least, so far as she could judge; for she dreaded all attempts at motion when in bed, as the mere friction of the moving limbs against the bed clothes was sufficient to excite all the distressing symptoms I have endeavoured to depict. In the free air, and unsupported, she certainly could move her arms, and when supported by two other persons, she could readily move her legs. Her strength was nearly gone; she felt excessively weak, and could scarcely, by being half carried, totter to her sofa; and at each pressure of the feet against the floor, spasms came on.

On examining the spine, (which was well formed,) by pressure, as well as by the application of a hot sponge, I found but little pain experienced in the cervical region; the dorsal was tender, and any blow there gave her a

painful thrill, with the excitation of slight spasms in the upper extremities. The pain increased in proportion as the pressure was applied lower, until the last two lumbar vertebræ was reached, where a sharp blow produced insufferable pain, and a rigidity of the legs approaching opisthotonos; the sacrum, however, could be struck, and the coccyx bent up, without pain. There was neither involuntary action, nor paralysis of the bladder or rectum; appetite excellent; bowels open daily. Urine at night, clear, neutral, sp. gr. 1020; at noon, pale like water, acid, sp. gr. 1008. All the specimens were free from albumen, and did not become alkaline in twelve hours.

I confess I found myself in no small difficulty in coming to a determination on the nature of this very curious case. I had before me a lady, naturally anything but irritable, or of nervous or hysteric temperament, who a few weeks before was in good health. She suffers, as she believes, from the bite of an insignificant insect, and within twenty-four hours absorbent inflammation commences in the bitten limb; this runs through a severe but not protracted course, nearly identical with that of phlegmasia dolens in a puerperal woman; the tension subsides, but pain in the tract of the nervous trunks remains. After a short pause, a less intense but similar state appears in the unbitten limb; the phlegmasia subsides, but neuralgia is left. The vascular action in both limbs having disappeared, the neuralgic pains appear to mutually advance and meet: and are found in greater intensity at the sacro-lumbar articulation. A temporary and delusive improvement in general health occurs, only to be succeeded by an exalted irritability of the whole extent or the spinal cord, from the cervical region downwards, the *reflex function becoming intensely marked, quite independent of any loss of the influence of volition over the limbs, and a physiological condition being presented, resembling more closely that observed in a decapitated snake than any other.*

The brain was unaffected; memory, reasoning, the senses, all perfect; motion and sensation universally unaffected. In a word, but one conclusion could be drawn; viz., that my patient was suffering from a highly irritable state of the true spinal axis, whatever else she may have been labouring under. All acute action was gone; the calm face, the clear tongue, the quiet pulse, the correct condition of the functions, all indicated the absence of any of those morbid changes included in the phenomena of inflammation, and connected probably more particularly with want of integrity in the vegetative or organic nervous system. Then the perfect consciousness, sensibility, and volition, demonstrated the integrity of the brain; the want of peripheral pains, the absence of morbid changes in the urine, and absolute freedom from all paralysis, shewed, at least that there could be no important organic lesion of the spine. One series of functions of this important element of the nervous system seemed nearly alone involved, those which are comprehended under the term of *reflex*, and to which the attention of physiologists has been directed by the laborious and philosophical researches of Dr. Marshall Hall. Yet my experience failed in bringing to my recollection another similar case. I could only look to tetanus and hydrophobia on the one hand, and to chorea on the other, for any justification of the opinion I arrived at, and yet I need not say how infinitely distant were such analogies. I however ventured to give the following opinion: that the gnat-bite having inoculated the patient with a morbid poison, absorbent inflammation occurred as from a dissecting wound, which ran its course, involving probably in the cotemporaneous inflammation the femoral nerves; and, on the subsidence of acute action, left the patient, (as is not uncommon after ordinary phlegmasia dolens), the subject of intense neuralgic pain in the affected limb. After the recession of absorbent inflammation, in the other leg, the irritable state of the nerves was propagated to the spinal cord, perhaps by extension of a very low form of inflammation, and the result was the production of an exalted irritability of the spinal marrow, analogous to that produced by the inoculation of strychnia.

I am quite prepared to hear this opinion found fault with, for at least it was but begging the question. I have candidly given it in the words in which *I* expressed it at the time to Dr. Baker and Mr. Thorpe. I suggested the following mode of treatment.

1. Keeping up the general health, and backing up the constitution against the local disease, by bland nutritious diet.

2. Endeavouring to reduce spinal irritability by rubbing unguentum veratriæ (veratriæ, gr. viij, adipis 3 vj), along the spine twice a day.

3. Endeavouring to restore the reflex influence more to the dominion of the will, by nervine tonics, and gently stimulating the capillary circulation generally, by the mildest alteratives. As she had taken mercurials before I saw her, I suggested sulphate of zinc, in doses of gr. i, three times a day (the dose being increased every third day), with gr. iij of iodide of potassium. I need hardly say I suggested the sulphate of zinc from its remarkable influence in chorea and allied affections.

A month passed over before I heard of her progress. The exicited state of the spine had, I learnt, rather increased for a week after my visit, and then became stationary. As she did not improve, the family became anxious; farther consultation was desired, and I was again summoned on October 21st, not quite five weeks after my first visit. I found the patient as cheerful and happy as before, perhaps rather improved in health. I fancied that the spasmodic shocks—for such alone was the term I could apply to them—were less intense. I could, however, arrive at no other opinion than I had previously, and I begged a continuance of the treatment. She had borne the sulphate of zinc well, up to the ℈j thrice a day. I replaced it by valerianate of zinc for a change, and substituted ung. aconitinæ (aconitinæ gr. i, adipis 3 i) for ung. veratriæ. I heard of her afterwards several times by letter; and, at my wish, as she was left anæmiated, iron, in the form of ammonia-citrate, was given for a few weeks, and the nervous energy of the weakened limbs restored by carefully and gently applied electro-dynamic currents. I did not see this lady again until the twenty-first October, 1845, exactly a twelvemonth after my last visit: being called to a patient in a neighbouring village, I went on to her residence to see her. I was much gratified at seeing her in her drawing-room, sitting in an easy chair, from which she rose, with but a slight effort, to welcome me. Her history, from the time of my seeing her a twelvemonth before, may be told in a few words. The state in which I had left her had gradually subsided, under the use of the remedies; the pain in the legs continuing after the cessation of spasms. At the end of the month the latter ceased, having been gradually and insidiously replaced by partial paralysis of motion, a condition from which she had very slowly emerged under the influence of the electricity; and when I saw her she was absolutely well with the exception of some rigidity in the limbs, rendering assistance necessary in walking. She has managed to get to church, up a tolerably steep hill without support.

As I stated at the outset, I do not purpose making any remarks on this case. It was to me a novel one. I have but once since seen one at all approaching to it; and it is for the members of this society to discuss its nature. I frankly state, that my mind is by no means better made up as to the pathology of the case, than at the term of my first visit. As to my diagnosis, I gave it to the Society, as I gave it to the lady's medical attendants; it led me to reason out a mode of treatment, under which, (and, I hope, to a certain extent, by the aid of which) she has been nearly restored to health.

Perhaps I may be allowed to submit for discussion the following points, having, in the course of the narrative of the case, expressed my own opinion with regard to some of them,

1. Had the gnat-bites, and the consequent absorption of a septic poison, anything to do with the origin of the affection?

2. Was the supposed phlegmasia dolens really phlebitis, or inflamed absorbents? or, was the inflammation really limited to the tract of the nerves of the limbs?

when the muscular disturbance will be on the opposite side: general, when the affection is on both sides; and in the cases of extensive and acute chorea, the parts involved would not be limited to the centre of emotion, but would extend to the cerebellum, giving rise to the disturbance of the locomotive and co-ordinating powers; and, on the other hand, it would involve the corpora striata and optic thalami, and through them the hemispheres, impairing voluntary power and sensibility, and contributing to that imbecility which frequently accompanies chorea of long duration.

The readiness with which sleep controls the choeric convulsions may be adduced as a further indication that this disease has its seat in the brain; sound sleep is undoubtedly a peculiar affection of the brain—a state in which the particles of that organ seem to assume a condition of quiescence, which contrasts remarkably with that unceasing, ever active change, of which it, more than any other part of the body, is the seat. This state, whatever it be, is incompatible with that which gives rise to the choeric convulsions; and hence the moment that sleep steals over the patient, and overwhelms his senses, the movements of the limbs, however active, cease, but return immediately the state of sleep has withdrawn.

I would remark here that this fact of the influence of sleep in controlling the movements of chorea, tells strongly not only against the view which localizes the morbid process of chorea in the spinal cord, but also against the doctrine which affirms the existence of a certain antagonism between the spinal cord and the brain. Were the spinal cord the seat of chorea, and did such an antagonism as I have referred to exist, the state of sleep would be the signal for the immediate development of increased and more active movements, and waking would rather tend to control these movements by the renewal of the activity of the brain.

And now we may inquire, what is the nature of the morbid process upon which the development of chorea depends? With reference to this inquiry, we have the negative evidence of morbid anatomy that the morbid process in the brain is not such as to produce lesions recognisable by our means of observation; and we have the positive evidence of clinical observation that the disturbance which it produces easily admits of repair by natural means, or may be completely controlled by sleep.

If, with these facts, we consider the nature of the movements themselves, which are precisely those of an asthenic state, combined perhaps with some irritation, we get some further insight into the choeric morbid process. The movements are not unlike those which we observe under other circumstances of great debility, and when general nutrition is impaired—the subsultus of typhus—the paralytic shaking of old age—the tremblings of the habitual drunkard. In all these cases the development of the nervous force is materially impaired—the material of the nervous battery is nearly exhausted—the exciting fluid is weakened; and hence you have a feeble nervous force irregularly developed.

And the general history of the patients who suffer from chorea abundantly confirms the view that the nutrition of the brain, and, indeed, of the whole nervous system, must be impaired. They are ill-nourished, weakly persons, often badly clad, with a poor and pale blood, more or less infected with the matter of scrofula, or of rheumatism, or perhaps with some morbid matter peculiar to chorea itself, or generated in the system by a depraved primary assimilation. And, looking to the state of the muscles themselves, we cannot pronounce them to be in a healthy state. In choeric patients the whole muscular system is in a more or less soft and flabby condition; and, if you compress the affected muscles, you do not find the firm resistance of a muscle contracting with its normal vigour, but rather that which indicates that the muscle acts with feebleness, and is incapable of perfectly developing the muscular force.

But some one will ask, if the phenomena of chorea are in any way dependent on a depraved and poisoned state of blood, how comes it that they are so frequently localized? This localization of chorea to one side of the

body, or even to one limb, or to the muscles of the tongue is by no means inconsistent with what we know of the laws of action of morbid poisons. Witness the fixation of the syphilitic poison to the skin and periosteum—of the scarlet fever poison to the tonsils and lymphatic glands—of measles to the lungs—of cholera to the gastro-intestinal mucous membranes—and look at the morbid localization of the matter of gout, as well as that of rheumatism, even in cases where the blood is largely charged with it. It in no degree militates against the humoral view of the pathology of gout, that the morbid matter selects the great toe as its favourite locality; nor against a similar view of the pathology of rheumatism, that its morbid poison is prone to attack the heart.

I have now, I hope, said enough to justify me in drawing the following conclusions respecting the pathology of chorea:—

1. That chorea is a disease occurring at a time when the nutrition of the brain is passing, as it were, through a state of transition, from that of infancy or very early childhood, to that of the adult period, when that organ is peculiarly prone to suffer from mental shock, or other causes of disturbance of the system, and more especially when the blood is in an unhealthy state, deficient in some of its staminal principles, or containing some morbid element.

2. That the part of the brain mainly affected is the centre of emotion, but that the extent to which it suffers is sometimes limited to one side of that centre, sometimes to both, again extending to the cerebellum or to the corpora striata, or optic thalami.

3. That the nature of the cerebral affection is one of weakened nutrition, with some degree of irritation; as poor blood, rendered, perhaps, impure by the presence of the matter of scrofula, or of rheumatism, or by some morbid matter peculiar to chorea, excites the nervous battery, and causes it to generate its force feebly and irregularly. The centre of emotion thus feebly excited and irritated by the presence of an abnormal ingredient in the blood, extends its feeble and irregular polarity to that portion of the centre of implantation of the nerves, which, as the polar state of the conductors of the battery is regulated by that of the battery itself, exhibit the same enfeebled polarity as the centre in which they are implanted.

Lastly. The disease is essentially one of depraved general nutrition, which must be set right before the symptoms which arise out of the local disturbances can be removed; and this is the point of practical interest which must regulate our treatment of the disease.

These conclusions respecting the pathology of chorea receive confirmation from the facts to which I have already alluded—namely, that choeric movements occur in certain gouty states, and also in white softening of the brain, arising from diseased arteries. Under both these conditions the nutrition of the brain, as well as that of the nerves and muscles, must be depraved and weakened; depraved especially in the former instance, by the matter or poison of gout; weakened in both.

And the treatment which is now by general concurrence, and with an unanimity which scarcely exists as regards the treatment of any other disease, pursued in cases of chorea, goes further to confirm these views. No one now-a-days thinks of adopting for this malady any other treatment but one eliminatory and corrective of the various secretions, by the use of purgatives, and, at the same time, tonic and bracing to the nervous system, by the free application of cold water to the surface, and also tending to improve the quality of the blood by a nourishing diet, by chalybeates, quinine, and various metallic tonics. And if, notwithstanding the use of these strengthening remedies, the nerves of the limbs still exhibit debility or paralysis, the application of the stimulus of galvanism rarely fails to excite and promote their nutrient activity.

This plan of the treatment of chorea has not been adopted with such general consent without the previous trial of other plans. Sydenham, as is

well known, treated chorea by bleeding; but he appears to have had very little experience of the disease. The authority of Sydenham appears to have led his successors to continue this mode of treatment; and even Cullen had not wholly abandoned it—so hard is it to give up a practice sanctioned by high names. Heberden, indeed had arrived at a different conclusion. This eminently practical physician says—"Bleeding and purging, and violent medicines, can hardly be judged proper for a distemper attended with no inflammation nor heat, and particularly incident to a very tender age, and to the weaker sex; and which, if left entirely to itself, would, I believe, generally cease spontaneously, and leave the constitution unhurt. This reasoning, he adds, appears to me to have been justified by fact and experience. When they have been used, I never saw any good effects from them, and rather suspect that they have done mischief.

In the acute form of general chorea, it is very important that the practitioner should not suffer himself to be led by the urgency of the symptoms, and the violence of the movements, into the adoption of any depleting or depressing treatment under the notion of stopping the movements by reducing the powers of the patient. The more you weaken the patient under these circumstances, the more incessant and urgent will the movements become. Great diligence, however, is needed in administering support and stimulants with the utmost freedom, and in throwing in large quantities of quinine and iron, or other tonics, care having been previously taken to unload the bowels by clyster or purgatives. Great benefit also arises from the free and frequent use of the cold bath; from what I have myself seen, I would say that the greatest immediate benefit arising from the use of the cold bath is from its exciting a disposition to sleep much more decidedly than opiates, which do not generally act favourably in any of the forms of chorea. *Med. Gaz., April 27, 1849, p. 724.*

25.—ON THE ACTION OF MEDICINES WHICH INFLUENCE THE NERVOUS SYSTEM.—By Dr. A. B. Garrod.

We have seen that the composition of the nervous tissues differs remarkably from that of other textures, in containing a large amount of phosphorized fatty matters, which have been named cerebrin and phosphorized oil; that is, fats having phosphorus, in an unoxidized condition, entering into their constitution, in the same manner that iron forms an essential element of hæmatosine, or the blood pigment. We have found also, that, according to Dr. Bence Jones, the elimination of the phosphates is increased in acute inflammation of the brain, the excess in these cases doubtless arising from the increased waste of the phosphorized fats; and the conversion of the phosphorus into phosphoric acid. These facts certainly indicate that phosphorus forms an important element of the nervous system. On reviewing the remedies which appear to have a direct influence on different portions of the nervous centres, we find that the most prominent among them are certain principles derived from the vegetable kingdom—viz., the vegetable alkaloids—bodies, all of which contain nitrogen in their composition, with the exception, perhaps, of picrotoxia; but even this requires confirmation. The parts of the nervous system upon which the action of these principles is directed differ considerably—some, as morphia, and codeia, acting on the brain; others, as strychnia, brucia, &c., on the spinal cord; others, again, as digitalia, nicotina, on the heart, through their influence probably on the ganglionic nerves. It was formerly supposed that the essential oil of bitter almonds was poisonous, from its influence on the nerves; if such were the fact, it would prove a very striking exception to the rule which we have found to hold good in so many cases; Wöhler and Frerichs, have shown, that when entirely freed from prussic acid its effects are perfectly harmless.

We also find that there are bodies in the mineral kingdom which produce similar effects, among which the most striking examples are seen in the

metals arsenic and antimony; and in others, in a more or less degree. The same also may be said of phosphorus itself, when given in an unoxidized form; and perhaps, also, of ammonia.

When considering the nature of the elementary substances in our introductory lectures, you will remember that we arranged them in certain groups, and stated, at the time, that the elements in each group, however unlike in physical conditions, yet possessed properties which, in a chemical point of view, brought them in very close relation to each other. One of these classes consisted of arsenic, antimony, phosphorus, and nitrogen—elements very nearly allied to, and frequently having the power of replacing, one another in compounds. Hence, then, we find that the substances which have the power of acting most powerfully on the nervous system are those which contain in their composition arsenic, antimony, nitrogen, and also phosphorus. The first two elements appear to operate when administered in any state of combination, provided they are absorbed into the blood; the two latter require to be in certain peculiar states, as they are themselves normal constituents of the animal body; and with regard to nitrogen, different amounts of this element and the different states in which it exists, appear to endow it with different properties. That different methods of combination of the elements influence greatly the effects of a substance on the economy is beautifully exemplified in the action of the different cyanides; ferrocyanide of potassium (the common prussiate) being harmless, whereas when heated to redness in a closed vessel, it is converted into a most deadly poison, from the change of the ferrocyanide into the simple cyanide of potassium. Again, we can trace still further analogies between these different cerebro-spinants; thus, quina, containing nitrogen, has its properties nearly approached by arsenic; and antimony, in its power of subduing vascular action, appears not very unlike the active principle of digitalis. Of course we only wish these remarks to be considered as purely hypothetical; but still it is interesting to notice any circumstances which seem to throw the slightest glimpse of light on the action of any therapeutic agents. *Lancet, Dec. 30, 1848, p. 709.*

26.—USE OF CHLOROFORM IN TOOTHACHE.

Mr. Tomes, in his Lectures on Dental Physiology and Surgery, recommends chloroform to be applied on a little cotton wool to the tooth in order to remove the pain. The best form for application is made by dissolving a little gum mastic in the chloroform, whereby the fluid is thickened; and, when put into the tooth with cotton wool, will remain there a long time, and keep up its sedative influence: whereas, if the chloroform be used alone, it will be soon washed away by the saliva, and its effect lost.

Medical Times, Dec. 2, 1848, p. 131.

27.—USE OF CHLOROFORM IN NEURALGIA.

M. Leriche (L'Union Médicale, 1 Janvier, 1848), relates the case of a patient suffering from neuralgia of the cervical plexus. The attacks came on at intervals of one or two months, and lasted several days, in spite of the remedies employed. On one occasion, M. Lériche administered about fifteen or twenty drops of chloroform on a handkerchief. The pain was instantly removed, and the patient remained free for two hours, when it was again removed by a similar inhalation. Dr. Contal, of Vezelise, employed friction with chloroform in several cases of neuralgia. One was a case of facial neuralgia on the right side. Twenty-three drops were rubbed in, which procured relief for two hours; after which the pain returned, but with less intensity, and was relieved by the application of ten drops.

A third application of the chloroform was required during the night, after which there was no return of the neuralgia. In another case, there was intercostal neuralgia on the right side. Fifteen minims of chloroform was rubbed in, and produced relief for half an hour. The pain then returned in the breast, but was entirely removed by friction, with ten drops.

In a third case erratic rheumatic pains had become fixed in a severe form, in the left intercostal region. They were totally removed after the sixth friction. The local application of chloroform, in these cases, produced either a slight and transient burning sensation, or of a very cold body being applied. [Gazette des Hopitaux, Feb. 3, 1849.] In a case of dental neuralgia, arising from caries of a molar tooth, Dr. Pigeolet applied a drop of chloroform to the affected tooth, with the effect of relieving the pain.—[Gaz. Med de Paris, Feb. 3, 1849.]

London Journal of Medicine, April, 1849, p. 365.

28.—USE OF CHLOROFORM IN HICCUP.

In the case of a gentleman, forty-six years of age, of weak constitution, and highly nervous temperament, M. Latour employed chloroform during a very severe attack, which had lasted during three hours, the convulsions of the diaphragm occurring at intervals of six or eight seconds. A bottle containing chloroform was applied to the nostrils, and removed after a few inspiratrons. At the first removal, a temporary cessation was produced, and three applications of the chloroform bottle entirely put a stop to the paroxysm. [L'Union Medicale, 30th Dec., 1847.]

London Journal of Medicine, April, 1849, p. 365.

ORGANS OF CIRCULATION.

29.—ON POLYPIFORM CONCRETIONS IN THE CAVITIES OF THE HEART.

By Dr. O'B. Bellingham, Dublin.

[Dr. Hope and M. Bouillaud classified the so-called polypi of the heart into three kinds, viz., unorganized, slightly organized, and more completely organized. Dr. Bellingham proposes a different arrangement of them. He says:]

I propose to consider these concretions under the following heads, viz.:—1. Concretions consisting of a coagulum coated with fibrine. 2. Concretions consisting exclusiveiy of fibrine. 3. Concretions consisting exclusively of lymph. 4. Concretions consisting of lymph coated with fibrine.

1. *Concretions consisting of a coagulum coated with blood.*—These (which, however, scarcely deserve the name of polypi, inasmuch as they are either a post-mortem occurrence, or are formed only during the last hours of life,) consisting of a more or less firm coagulum of blood, partially or completely coated with fibrine, which fills and distends one or both the cavities of the right side of the heart particularly, and frequently extends into the large vessels, but are scarcely adherent to the parietes. They occur in cases in which the blood had accumulated during the last hours of life in the right cavities of the heart; and their occurrence is to be regarded rather as a pathological phenomenon than as a circumstance of any practical importance.

The three other forms of these concretions are developed during the life of the patient, are accompanied usually by sufficiently well-marked symptoms, and are frequently the immediate cause of death; whether the diseased state under which they arise have its seat in the heart itself, in the lungs, or in some other part.

2. *Concretions composed exclusively of fibrine.*—In these, which are the

most frequent, the concretion consists of fibrine; it has a yellowish white color, is semitransparent, more or less elastic, and more or less adherent to the parietes, particularly to the carneæ columnæ and tendinous cords of the valves. It occurs in cases in which a considerable impediment to the circulation had existed for some time previous to the patient's death, whether this impediment was seated in the heart or in the lungs; in consequence of which, the fibrine of the blood separates from the other constituents, and concretes upon the valves or orifices, or upon the parietes of the ventricles or auricles. These fibrinous concretions may be developed in any disease in which the circulation through the cavities of the heart is much impeded. They are met with in acute bronchitis, in pneumonia, and in the advanced stages of valvular disease; and they are not unfrequently the immediate cause of death in these diseases.

3. *Concretions composed exclusively of lymph.*—These, which are the most rare, are altogethor different in their origin from those which precede; while the former are developed by the mechanical separation of the fibrine from the other constituents of the blood in its transit through the heart, the latter are deposited by the vessels themselves which supply the lining membrane of this organ. This form or concretion occurs in cases of inflammation of the lining membrane of the heart; it usually has its seat upon the valves or orifices of the left side of the heart, and it is deposited by the vessels of the part the seat of the inflammation: in fact, as it is derived from the vessels which supply the tissue of the heart with blood, its source is as different as is the blood which circulates through the heart from that which supplies nutriment to this organ.

4. *Concretions consisting of lymph coated with fibrine.* — This form of concretion is a combination of the two last species; it is much more frequent than that last described, but more rare than the two former species. In it, the nucleus is lymph, which is deposited upon the valves or orifices as the result of acute or chronic endocarditis; but the great bulk of the concretion consists of fibrine deposited upon it, sometimes in concentric layers, as we see in aneurismal sacs. This form of polypous concretion occurs in cases where the lining membrane of the heart had been at a former period the seat of inflammation, and where a considerable impediment to the circulation through this organ had existed for a longer or shorter time previous to the patient's death. Like the last species, it is found in the left cavities of the heart.

These four forms of polypous concretion are not all of equal frequency, some are sufficiently common, others are exceedingly rare; some are usually only found upon the right side of the heart, others only upon the left. The concretions composed of coagulated blood or of fibrine are most frequent in the right cavities of the heart, and often extend through the auriculo-ventricular orifices, or into the large vessels. Those which consist of lymph, or of lymph coated with fibrine, are most frequent in the left cavities of the heart. The former are sometimes of such a size as to fill and distend the cavities of the heart; the latter, in general, merely impede the action of the valves; when composed of coagulated blood or of fibrine, they are smooth upon the surface, and moulded to the shape of the cavity in which they are contained; when composed of lymph exclusively, their surface is uneven and their shape irregular. The concretions consisting of coagulated blood are not adherent, though they may be entangled among the carneæ columnæ, or chordæ tendineæ; those which consist of fibrine are more adherent, but may still always be detached; those composed of lymph, or in which the nucleus consists of lymph, are intimately adherent to the part upon which they are deposited.

The concretions which consist of fibrine are the most frequent, and the opinion has been advanced on very respectable authority, and these fibrinous masses not only become organized, but that they undergo the changes which organized tissues in other parts are found to undergo, such as soften-

ing, the formation of pus, &c.; and that they are sometimes united by cellular tissue to the lining membrane of the cavities of the heart. Thus, Bouillaud, describing them, observes: "They are white, decolourized, elastic, glutinous, adherent to the parietes of the heart, and confused with the tendinous cords and fleshy columns. They are in some sort half-organized, and very analogous either to the inflammatory crust of the blood, or to false membranes. Some present here and there points, or red lines, which are really nothing more than the rudiments of vessels." Dr. Hope observes, speaking of the slightly organized polypi: "It may be premised as a fact ascertained by observation, that *fibrine* separated from the blood, and become concrete in a living organ, (whether *the heart*, *the bloodvessels*, or serous, cellular, or other tissues into which it had been extravasated,) retains its vitality, and is susceptible of organization in an equal degree with *inflammatory lymph*."

This view of the subject is evidently incorrect: those masses of fibrine are unorganised, and incapable of becoming organized; nor are they ever united to the lining membrane of the heart by cellular tissue. Indeed, a knowledge of their composition, and of the manner in which they are formed, ought to have been sufficient to set aside such an absurd idea, consisting as they do simply of one of the constituents of the blood, mechanically separated from the others in its transit through the heart.

The concretions which consist of lymph, instead of being derived from the blood which circulates through the heart, are deposited by the vessels of the inflamed tissue, and being analogous to the false membranes secreted by serous surfaces, may evidently become organized: in fact, the vegetations found upon the valves and orifices of the heart, consecutive to endocarditis, are nothing more than these concretions upon a small scale. Deposits of lymph in the cavities of the heart, of such a size as to deserve the name of polypous concretions, are, however, very rare; more frequently the nucleus is lymph, and the great bulk of the concretion is made up of fibrine, deposited upon it either in amorphous masses or in regular stratified layers. In some instances, however, such an amount of lymph is secreted as not only to impede the action of the valves, but to obstruct the circulation through the cavities of the heart, and to occasion the death of the patient. An example of this kind I communicated to the Surgical Society some time since, and the preparation is now in the Museum of the College.

The concretions which form in the cavities of the heart during life, we have seen to consist either of fibrine or of lymph, or both. That which consists of coagulable lymph, is a product of inflammation; that which consists of fibrine, is not a product of inflammation. The former is deposited upon the inflamed surface by the vessels which supply the heart itself with blood; the latter is mechanically separated from the blood which circulates through the heart. These two substances differ from one another, not only in appearance, but in composition, in the mode of their production, and in the circumstances which give rise to their deposition; yet we find that the terms fibrine and coagulable lymph are still used indiscriminately by writers to designate the same substance. Thus Dr. Williams, in his Elements of Medicine, observes (page 98): "Fibrine, or the buffy coat of the blood, is also the material of which new membranes and cicatrices are formed, constituting the coagulable lymph which is the plasma or basis of the constructive or reparative process."

Fibrine, we know, may be mechanically separated from healthy blood by washing repeatedly with water either the crassamentum of blood drawn in venesection, or the coagula which adhere to twigs, with which the recently drawn blood of animals is briskly stirred; the whitish elastic mass obtained in this way resembles in every particular the fibrinous concretions found in the cavities of the heart, and which have received the name of polypi. Now fibrine, whether it is separated from the blood which circulates through the cavities of the heart, or whether it is deposited in concentric layers in an aneurismal sac from the blood which passes through it, or whether it is me-

chanically separated from blood removed from the body, is a perfectly unorganized substance, and is perfectly incapable of becoming organized.

Coagulable lymph, on the other hand, is a product of inflammation; it is deposited by the vessels upon the part the seat of the inflammation, and it cannot be separated from healthy blood. That it is an organizable substance, and that it does become organized, is also sufficiently proved by pathology.

Recent microscopic observations have shown that the state of inflammation is accompanied by a great increase in the number of the white or colourless globules of the blood; these white or lymph globules exist in healthy blood, but are more numerous in blood drawn in states of inflammation, (as shown by Mr. Gulliver,) and in blood taken from an inflamed part their number is still greater. The buffy coat of the blood consists of these colourless globules and fibrine; and the lymph effused upon the surface of inflamed serous membranes has the same composition.

Now, as coagulable lymph differs widely from fibrine, the indiscriminate application of the same term to both is to be deprecated; indeed, the vague manner in which the terms fibrine and lymph are still used has led to much confusion; the fibrinous masses which form in the cavities of the heart, and the concentric layers of fibrine which are deposited in aneurismal sacs, being erroneously supposed to be analogous to lymph, and equally capable of becoming organized. We can never have accuracy of description unless the terms we employ are properly defined and restricted. The term fibrine ought to be confined to the unorganized material mechanically separated from healthy blood; the term lymph, to the organized substance deposited in, or upon, the surface of inflamed parts.

[The treatment of these cases can be little more than palliative, since they soon terminate fatally. Various means have been recommended with a view of dissolving the concretions, but the absurdity of such practice is obvious. Dr. Bellingham says in conclusion:]

The following conclusions appear to be deducible from the preceding details:

1. That concretions occasionally form in the cavities of the heart, during life, of such a size as to impede the action of the valves, to obstruct the passage of blood through this organ, and to occasion the death of the patient.

2. That these concretions, although termed polypi, have no analogy whatsoever with polypi, either in appearance, composition, or mode of development.

3. That certain diseases of the lungs or heart, as bronchitis, pneumonia, endocarditis, valvular disease, &c., sometimes owe their fatal termination to the formation of these concretions in the cavities of the heart.

4. That the concretions which form during life in the cavities of the heart may consist either of fibrine or of lymph, or of lymph coated with fibrine.

5. That the concretions composed of fibrine are most frequent upon the right side of the heart, but may occur on both sides; and that the concretions which consist of lymph, or of lymph coated with fibrine, are usually found only on the left side of this organ.

6. That fibrinous concretions, whether they occur in amorphous masses, or in stratified layers, are deposited from the blood which circulates through the heart. That concretions composed of lymph, whether this forms the substance of the mass, or merely its nucleus, are deposited by the vessels which supply the heart itself with blood.

7. That fibrine, whether it constitutes the substance of these concretions, or whether it is deposited in concentric layers in the sac of an aneurism, is perfectly unorganized, and perfectly incapable of becoming organized. That lymph, on the contrary, is an organizable substance, and quite distinct from fibrine, with which it is still confounded by some physiologists.

8. That where pus has been found in fibrinous concretions contained in the heart, its presence is to be regarded as the result of phlebitis, not as a product of inflammation in a substance which is quite unorganized, and consequently incapable of undergoing such changes.

9. That increased extent of dulness in the præcordial region, confused or irregular action of the heart, intermission or irregularity of the pulse, or an abnormal murmur accompanying the heart's sounds, are not necessarily symptoms of the development of a polypous concretion in the cavities of the heart.

10. That no means are known by which polypous concretions in the heart, once formed, can be dissolved; consequently, the administration of substances which render the blood more fluid, or which are supposed to be capable of dissolving them, can have no useful effect.

Dublin Medical Press, Feb. 9, 1842, p. 82.

30.—ON THE USE OF OIL OF TURPENTINE IN HEMORRHAGE.

[Oil of turpentine taken internally is of the greatest use in hemorrhages from the mucous surfaces:]

It may be proper to mention, that John Hunter had great confidence in the styptic properties of oil of turpentine. In treating of the suppression of hemorrhage, "A dossil of lint," he says, "dipped in oil of turpentine, after having first wiped the wound clean, in order that it may reach the vessel, is the best, and may be renewed pretty often. I have seen it immediately stop vomiting of blood from the stomach, after all other means had failed, given internally with white of egg as often as the stomach would bear it. In external hemorrhages, where it had not the desired effect applied externally, I would give it internally. It is the best, if not the only true styptic. Thus in a case of nasal hemorrhage, which nothing would stop, I gave ten drops of oil of turpentine in a draught, and repeated it every two or three hours, which entirely stopped the bleeding in less than twenty-four hours; and it never returned.

On this passage a note is given to the following effect: "It is scarcely necessary to observe, in the present day, that this eulogium on the oil of turpentine is unmerited." What then becomes of the recommendations lately given by Dr. Seymour and Mr. Vincent? It is supposed that John Hunter derived his ideas of the styptic properties of oil of turpentine from the book of James Young.

Edinburgh Medical and Surgical Journal, April, 1843, p. 493.

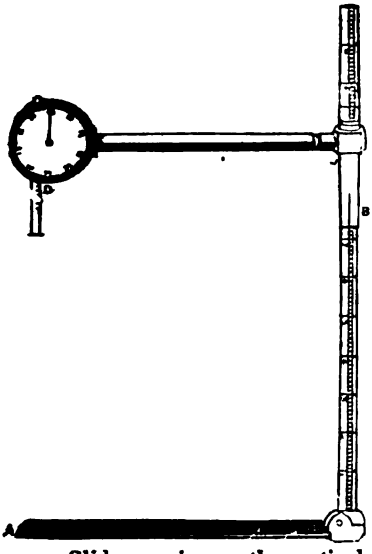
ORGANS OF RESPIRATION.

31.—ON THE MOVEMENTS OF RESPIRATION IN DISEASE.—By Francis Sibson, Esq., Resident Surgeon to the Nottingham Hospital, &c.

[Mr. Sibson has published a very elaborate paper in the last volume of the Medico-Chirurgical Transactions, on the movements of respiration in disease. Notwithstanding the labours of many high authorities on diseases of the chest, little or nothing was definitely known upon the subject, if we except the interesting facts ascertained by Mr. Hutchinson, some of which were noticed in our fourteenth and fifteenth volumes. In order, therefore, to give precision to his investigations, Mr. Sibson got an instrument made for the purpose of accurately and minutely measuring the movements of the chest. He says:]

It is a *Chest-Measurer*, measuring the diameter of the chest, and indicating by the motion of the index on a dial any movement of respiration to the hundredth of an inch. It is in fact a micrometer of motion. It can be readily applied to any part of the body, and by successive applications of it

over the chest and abdomen, all the movements of respiration can be ascertained with minute accuracy.



The character as well as the extent of motion may be read off from the dial. It indicates the rhythm of respiration, showing whether the expiration be equal to, longer, or shorter than, the inspiration.

The chest-measurer shows the exact amount of chest movement, both during tranquil breathing and the deepest possible inspiration and expiration. It thus tells indirectly the extreme breathing capacity of the chest, which is rendered perfectly by the "spirometer" with which Dr. Hutchinson has made so many valuable observations. In this respect, it is indeed a "pocket spirometer."

Description of the Chest-Measurer.

A. Brass plate, covered with silk, on which the patient lies.

B. Upright rod, divided into inches and tenths, to indicate, by the slide at B, the diameter of the chest.

C. B. Slide, moving on the vertical rod B, and carrying the horizontal rod and dial C. D.

C. D. Horizontal rod, dial and rack (D). This rod can be drawn out like a telescope from C—an outer rod sliding on an inner; and as the outer rod can be rotated on the inner, the inclination of the rack and dial can be varied at will, by the finger and thumb. This combination of slides forms a universal joint.

E. Rack and dial. The rack, when raised by the moving walls of the chest, moves, by means of a pinion, the index on the dial. One revolution of the index indicates an inch of motion in the chest; each division indicates the 100th of an inch.

The chest-measurer may be packed into a pocket case.

[In order to employ this instrument, the patient may be either in the sitting position, or lying quite straight in bed: the latter is the better position. The patient lies on the flat plate which forms the base of the instrument, and is directed to look steadily at the ceiling, that his attention may not be attracted to the movements of the dial. The instrument being then held perfectly steady, the rack and dial are successively moved over every part of the chest and abdomen where the observations are to be made. In order to form a standard by which to examine diseased persons, Mr. Sibson first tells us of the]

Motions observed by the Chest-Measurer during an Ordinary Inspiration.—In robust healthy males from the age of twelve to forty-five, the motion of the first six ribs (the thoracic and the uppermost of the intermediate set) was found to be trifling, but still in every case and everywhere some slight motion existed.

The motion of the upper end of the long bone of the sternum is usually from ·02 to ·06 in.; that of the lower end is about the same. The motion of the upper end is often greater than that of the lower, but the reverse is sometimes the case. The motion of the second ribs near their costal cartilages is a little greater than that of the corresponding portion of the sternum. The sternum is, indeed, pushed forward by those ribs through the medium of their cartilages; but a part of the force is spent in slightly bending the cartilages, and consequently the forward motion of the second

ribs is necessarily greater than that of the sternum; thus, while the movement of the sternum is from ·02 to ·06 in., that of the second ribs is from ·03 to ·07 in.

The advance of the sixth costal cartilages usually corresponds to that of the lower end of the sternum, being from ·02 to ·06 in. The movement of the fourth and fifth costal cartilages is usually scarcely equal to that of the second ribs. The lateral expansion of the sixth rib is in almost all cases less than the forward motion of the sixth costal cartilage; but in this comparison the lateral expansion of each sixth rib is taken separately, while the whole forward movement over the sixth cartilage is observed from dorsum to sternum: the whole lateral expansion of the chest, from sixth rib to sixth rib, is equal to, or even greater than, the whole antero-posterior expansion of the chest over the sixth costal cartilage.

Owing to the presence of the heart, the motions of the left fourth, fifth, and sixth cartilages, and the sixth rib, and, indeed, of all the left lower ribs, are less than those of the right; the difference being most usual and greatest over the fourth and fifth cartilages, and at the lateral expansion of the sixth rib. The motions of the five superior or thoracic ribs are, with the exceptions stated, every where pretty nearly equal.

The lateral motions of the eighth and tenth ribs are almost invariably greater than those of the thoracic ribs and cartilages, so long as the breathing is quite tranquil, and the motion of the thoracic ribs small; the lateral expansion of the eighth and tenth ribs ranges usually from ·05 to ·1 in., while the motions of the thoracic ribs and cartilages vary from ·02 to ·05 in. It will be remarked, that if the motions of the thoracic ribs be greater than usual, say ·06 to ·1 in., the lateral motion of the eighth and tenth ribs is not increased, and then all the costal motions are nearly equal.

There is very little difference between the exact motions of the ribs in healthy robust boys and in men, from the age of ten upwards to forty-five. This rule does not, however, obtain with regard to the diaphragm; for while in man, during the tranquil respiration, the advance of the centre of the abdomen between the xyphoid cartilage and the umbilicus is from ·25 to ·35 in., in boys and youths it is from ·2 to ·25 in. The movements of the abdomen to each side is about the same in boys and men, being usually from ·08 to ·12 in.

It is manifest, from these observations, that in tranquil breathing diaphragmatic respiration far outweighs costal, in the proportion of about 30 to 5. It is also evident that the eighth and tenth ribs have a greater expansion than the thoracic ribs, owing to their action being auxiliary to that of the diaphragm.

Summary of the Respiratory movements in Health.—In the healthy, robust male, the movement of the sternum and of the thoracic and intermediate ribs, from the first to the seventh, is from ·02 to ·07 in. during an ordinary inspiration, and from ·5 or ·7 in. to ·2 in. (the amount varying with the extreme breathing-capacity) during a deep inspiration. The ordinary abdominal movement (diaphragmatic) is from ·25 to ·3in.; the extreme, ·6 to 1·6 in. The ordinary lateral expansion of the diaphragmatic or lower ribs is greater, and the extreme expansion is usually less, than the respective ordinary and extreme expansion of the thoracic or upper ribs. The expansion of the second ribs is usually alike on both sides; below, all the inspiratory movements, especially those over the heart, are usually somewhat less on the left side than on the right, both during ordinary and extreme inspiration.

In the healthy boy, owing the greater flexibility of the costal cartilages, the extreme movement of the thoracic ribs is greater in proportion to the breathing-capacity than it is in the adult: the upper portion of the sternum advances more than the lower end during a deep inspiration; but there is little decided difference during tranquil respiration.

In the old man, owing to the consolidation of the cartilages, the motion

of the sternum during inspiration is usually greater than that of the ribs (in youth it is less), and the lower end of the sternum usually advances more than the upper.

In females the thoracic expansion is exaggerated, and that of the diaphragm and the lower ribs is restrained, owing, in great part, to the use of tight stays. The difference is much greater when the stays are on than when they are off.

When the stays are on, the thoracic movements at the second ribs is from ·06 to ·2 in.; the abdominal from ·06 to ·11 in. When they are off, the thoracic movement is from ·03 to ·1 in.; and the abdominal from ·08 to ·2 in. The restrained movement of the lower ribs during a deep inspiration is much greater when the stays are on than when they are off.

In infants the thoracic expansion is considerable, being from ·02 to ·12 in.; while the abdominal is from ·06 to ·15 in. The lower end of the sternum and the adjoining ribs usually recede during inspiration, especially if the abdomen be large, and the inspiration quick or sobbing.

[Mr. Sibson then proceeds to treat of the disturbance of the respiratory movements effected by various classes of diseases. Various diseases altogether external to the chest restrain the *motions of the ribs*. Thus lateral curvature of the spine, injury or disease of the ribs, pleurodynia, diseases of the mamma, axilla, shoulder and arm, and probably hemiplegia, restrain the motions of one side: and posterior curvature restrains them on both. On the other hand, certain circumstances, as the loss of an arm, permanently exaggerate the costal motions on one side. The *diaphragm* has its motion restrained by peritonitis, diseases of the liver, abdominal tumours, and aortic aneurism; and, to a less degree, by abdominal distention from flatus, or ascites. Of the diseases in the respiratory organs themselves, Mr. Sibson first speaks of obstruction in the large air passages. He says:]

Obstruction to respiration in the outer air-passages may arise from clogged and narrowed nostrils and palate, enlarged tonsils and narrowed fauces, larynx or trachea; obstruction to respiration in one lung, from narrowed or clogged right or left bronchus. In cases where the air-passages are materially obstructed, owing to the elongation and collapse of the lungs, the chest is flattened, narrowed, and elongated, the lower margins of the lungs are unusually low; from the presence of the liver, the right side is fuller than the left, and, from the collapse of the left lung in front, the heart is in great part in contact with the walls of the chest, its impulse being extensive.

The diaphragmatic descent and abdominal protrusion are very rapid and sometimes extensive, but generally the abdominal protrusion is diminished; the lungs, admitting air with difficulty, are lengthened, and, owing to atmospheric pressure, they collapse, and the sterno-costal walls, especially at the lower end of the sternum, fall backwards. The thoracic walls, in some places, often recede at first and then advance during inspiration. The extent of the reversed thoracic motion is in proportion to the narrowing of the air-passages and to the extent and rapidity of the diaphragmatic descent. During a deep inspiration, many parts of the thoracic walls, that fall in at the beginning of the act or during tranquil breathing, advance considerably as the expiration is prolonged. The inspiration is shorter than the expiration, especially in laryngitis: the expiratory falling back of the abdomen is often quick at first and then slow, but the expiratory falling back of the thoracic ribs is always equally slow throughout.

[Speaking next of obstruction in the smaller bronchial tubes, bronchitis, and vesicular emphysema, Mr. Sibson says:]

In emphysema, and, to a less extent, in bronchitis, the form of the chest and abdomen and the position of the viscera are the same that they are during the deepest possible healthy inspiration. The chest is full and prominent, the shoulders raised, the spine curved, the sternum forward, the costal cartilages at each side of it full, but not so prominent as usual.

The diameter of the chest is everywhere increased, the opposite seventh costal cartilages below the sternum are stretched far apart. The abdomen just below the prominent xyphoid cartilage is unusually hollow; the diaphragm is low and flat; the lower boundaries of the lungs and heart are a full inch lower than in the normal state. The heart is nearly covered with lung, the exposed portion of it, and consequently its impulse, being below sternum, behind and to the left of the xyphoid cartilage.

During the inspiration the diaphragm descends only from one-third to two-thirds of an inch, and the lower boundaries of the lungs and heart, and the upper boundaries of the abdominal organs, necessarily descend to the same extent. The cardiac region is lowered and lessened, the impulse becoming stronger and lower. The respiratory muscular actions are much exaggerated, while the movements are not proportionally, often not at all, increased. The diaphragm descends, the abdomen protrudes, and the superior thoracic (first, second, third, and fourth) ribs ascend and advance with energy; at the same time, the lower end of the sternum and the sixth cartilages fall backwards in the greater number of cases, from childhood to the age of 50.

The rhythm of respiration is materially and characteristically affected in emphysema and bronchitis. The inspiration is short, the expiration is prolonged. During inspiration, the air enters rapidly during the whole act, but the facility for inspiration increases towards the end. During expiration, the air rushes out easily and quickly at first, but with increasing slowness and difficulty towards the end. During inspiration, the air-tubes become larger towards the end, therefore inspiration is then easier; during expiration the air-tubes become smaller towards the end and more clogged with fluid, and therefore expiration is then more prolonged and difficult.

The expiration is more prolonged in proportion to the obstruction in the smaller air-tubes; it is longer in emphysema when combined with bronchitis, than in either emphysema or bronchitis simply. It is more prolonged when the obstruction is in the smaller, than when it is in the larger bronchial tubes.

During inspiration the abdomen advances very rapidly; the upper part of the sternum and thoracic ribs stand still just at first, and then advance rapidly; the lower end of the sternum and the adjoining cartilages fall back usually during the whole act, sometimes only at the beginning of it, unless there be a malformation of the chest or stiffness of the cartilages.

During expiration the abdomen recedes very rapidly at first, then stands still, and again falls back interruptedly, and with increasing slowness; the upper part of the chest stands still just at first, then falls back rapidly, and becomes progressively slower towards the end of the act; the lower end of the sternum advances during the whole time, or it advances at first, and then falls back. The increasing slowness towards the end of expiration distinguishes obstruction of the smaller bronchi from obstruction in the larynx, in which latter case it is also prolonged, but is equally slow throughout.

[Passing over Mr. Sibson's remarks on pleurisy and its consequences, we next take his]

Summary of the effects of phthisis on the movements of respiration.—In the earlier stages, the movements over the diseased portion of lung are restrained. When a mass of lung is solidified by tuberculous disease, the mobility is still further restrained.

When cavities are formed, their inspiratory expansion is much diminished, chiefly by the firm, tendinous, and pleuritic adhesions that embrace the diseased portion of lung. There is almost invariably some movement of inspiration over the cavity. But although the part in question always advances during inspiration, especially a deep inspiration, yet, at the beginning of the inspiration it sometimes recedes slightly, and frequently stands still just before its inspiratory advance.

The respiratory expansion and movements over a cavity are greatest just

towards the end of inspiration and the beginning of expiration, when the cavity and the tubes leading to it are the largest, and when the fluid in the cavity lies in its hollow, and does not plug the bronchial tubes. The obstruction to the movement over many cavities, especially those containing liquid, is greatest just at the beginning of inspiration, and towards the end of expiration, when the cavity and tubes are at the smallest, and the fluid, its amount being the same, plugs the bronchial tubes. The obstruction to cavernous respiration varies with the amount of fluid in the cavity and its tubes.

The firm walls surrounding a cavity have no inspiratory expansion: the respiratory movements over the region of dulness surrounding a cavity are much smaller than those over the cavity itself; they are often immobile; their motion is often reversed at the beginning or through the whole course of inspiration and expiration. The reversed motion is most frequent over the third and fourth cartilages.

The motion of the lower end of the sternum, and the sixth cartilages, on the affected side, is often reversed by the diaphragmatic lengthening and collapse of the lung. The descent of the diaphragm is somewhat restrained on the affected side, in about one half of the cases; the motion of the right diaphragmatic ribs is more frequently diminished than that of the left, when the respective superior lobes are diseased, owing, I believe, to the presence of the enlarged liver.

When the whole lung is more or less consolidated, and its expansion obstructed by tendinous adhesions, the lateral expansion of the whole affected side of the chest is lessened. If the diaphragm act freely, the movements of the sixth costal cartilage on the affected side may be reversed. Those of the superior thoracic ribs, over the cavity, are never reversed throughout, seldom even at the beginning of inspiration and expiration, but those of the third, fourth, and fifth cartilages are often prevented and reversed.

The respiratory movement of the opposite lung is, in the great majority of cases, exaggerated.

[Our limits will not permit us to give Mr. Sibson's interesting observations at greater length: for further information, and for the verification of those of Mr. Sibson's conclusions which we have given above, we beg to refer our readers to the original paper.] *Med.-Chir. Trans.*, 1848, *p.* 353.

33.—ON THORACIC VIBRATION, AS A MEANS OF DIAGNOSIS IN DISEASES OF THE LUNGS.—By M. Monneret.

By thoracic vibration is meant the sensation imparted to the hand placed on the chest of a person while speaking aloud or singing. He should pronounce some words in a loud and measured tone, which he will best do by being told to count some numbers. The linen or flannel shirt should be alone left on, and the patient seated while the lateral and posterior portions of the thorax are examined, and laid on his back while the anterior portions are so. The hand is then to be rapidly passed over the different regions of the chest, with a sufficient degree of pressure; and it is essential to remember that these normally furnish different intensities of vibration. Thus, the right side oscillates far more strongly than the left; and the following is the order in which the intensity decreases in the various parts: 1. The larynx and the trachea, as far as the sternum. 2. The four last cervical, and four or five first dorsal vertebræ. 3. The right sub-clavicular and sterno-mammary regions. 4. The same on the left side. 5. The space comprised between the spinous process of the cervical and dorsal vertebræ and the inner edge of the scapula. 6. The posterior and lateral regions. 7. The sternum and supra-spinal fossæ. 8. The anterior and inferior parts, i. e., the præcordial and hypochondriac regions. The thorax is not the only part which transmits this vibration freely, for it is felt along the

whole dorsal and part of the lumbar spine. Its intensity is very great at the cephalic extremity of this, especially the sinciput. The vibration is diminished if the chest is covered with thick muscles, or if there be deposits of fat or serum, and is very feeble in the mammary region in women. In those who have long, thin chests, or who have fallen into a state of marasmus, it is very perceptible.

Among the diseases in which the *intensity of the vibration is increased*, *pneumonia* may be first mentioned; and so marked is the increase in this disease, that it becomes an immediate means of distinguishing it from pleurisy. In fifty cases carefully noted, the vibration was always found remarkably increased when the inflammation occupied an entire lobe, or implicated the middle or lower lobes. The undulation indeed was just as great in pneumonia of the upper lobe; but, as in the normal state, the pectoral regions corresponding to this part of the lung vibrate more forcibly than at other parts, it requires more attention and a more accurate comparison of the two sides. Under the clavicle, in the axilla and the supra-spinal fossa, the vibration is often twice as strong as on the sound side. If the pneumonia (or tubercle) occupy the summit of the left lung, as the vibration is here normally more feeble than on the right side, we now find the two sides becoming alike in this respect. After a few weeks' practice in gaining familiarity with the normal differences prevailing at different portions of the thorax, the detection of pneumonia becomes very easy, the vibration increasing in intensity with its progress, and diminishing again as it is relieved.

If, however, there is any coexisting *effusion in the pleura*, the vibration will be proportionally feeble, or even become imperceptible if that increases, becoming thus in such cases a valuable means of diagnosis. So, too, in those cases of *general bronchitis*, when the symptoms are difficult to distinguish from those of pneumonia, the absence of vibration is conclusive. In respect to *children*, also, whose cries render auscultation so difficult, this means becomes of valuable assistance. It likewise often serves for the detection of *passive congestions* occurring in the course of fever and other general disease. In *phthisis*, the vibration also becomes much more intense when considerable masses of tubercles are deposited in the lung, and even a small amount of these suffices to produce an augmentation; and it has several times happened to the author to have the disease thus indicated to him, when all the ordinary signs were absent.

As in its progress the tubercle becomes surrounded by denser tissue, the amount of vibration increases, while if excavations are formed, it becomes diminished. Although in *pleurisy with effusion*, the vibration is nil, yet if false membranes are formed, and firm adhesions contracted between the lungs and thorax, it becomes very distinct. When the lung decreases in density, and air becomes interposed, the vibration is diminished (though less than in pleurisy with effusion), as in the case of emphysema; and in large excavations opposite the cavities we may find the vibration diminished, while at their condensed circumference it is increased. In four cases of pneumothorax, the vibration was absent.—*Rev. Med. Chir.*, tom. iv., pp. 128–39, 195–204. *Brit. and For. Med. Chir. Rev. Jan. 1849, p. 262.*

38.—ON THE PATHOLOGY OF PHTHISIS PULMONALIS.—By Dr. W. H. Madden, Physician to the Torquay Infirmary, &c.

[Dr. Madden agrees with Lebert and Addison, that the usual seat of tubercle in the lungs, is in the intervesicular areolar tissue; sometimes, however, it is deposited in the air-cells, or capillary bronchi. He considers that the essential characteristic of tubercular deposit, consists in its peculiar corpuscles, which are distinguished from abnormal epithelial cells, pus corpuscles, and the large transparent cancer cells, by being non-nucleated.]

Dr. Madden thinks that tubercular deposits are the uniform result of the operation of one special cause. We find a tubercular lymphatic gland, after having inflamed and suppurated, resisting all our attempts to heal it; we also find leech-bites producing incurable ulcerations over the skin of a malignant tumour. Again, a patient with tubercular disease of a joint, after it has been removed, dies of pulmonary consumption; and an analagous transference of the disease to some internal organ occurs, when a limb is removed for a carcinomatous tumor. Why should we deny a specific property in tubercular matter, any more than in cancer, and refuse to admit that their action is analagous? The argument, then, is, that "the fountain of the two diseases is alike a vitiation of the blood, and the phenomena presented by both are what they are, simply because the morbid elements have a certain determinate and altogether specific character; or, to speak with more correctness, because the vitiation on which they depend, is, in each, peculiar and distinct from all other morbid changes."

We have, then, "sufficient evidence to demonstrate that the particular substance, tubercle, is the result of abnormal nutrition; that it is the necessary consequence of a *peculiar* modification of those processes by which the living body is maintained in integrity, and by which its several parts grow and increase. I say *peculiar*, because it is clear that *all* malnutrition does not give rise to the production of tubercle; otherwise every one affected with severe or prolonged dyspepsia would inevitably become tuberculous, which we know is not the case. It is a special disease, and owns a special parentage."

Mr. Paget has endeavored to show, that each organic part of the healthy body, when first deposited, is an *excretion*, the removal of which fits the blood for the construction of other tissues. It appears to Dr. Madden, that this explains the very early occurrence of emaciation in cases of phthisis pulmonalis. For the separation of the *imperfect* matter, tubercle, from the blood, must of necessity render the remainder of that fluid more or less unfit for nutrition; it retains what it should have lost, or has parted with more than it should have given up; it is not healthy, and cannot act with healthy energy. These remarks apply especially to the gradual and insidious form of phthisis, not being the sequel of pre-existing disease. It is probably also an essential part of the process in cases preceded by pneumonia, or catarrhs, or a subsidence of exanthematous eruption, although the emaciation may be dependent on other causes also.

[Dr. Madden considers that tubercular disease in the lungs, and scrofulous diseases of the other parts, are manifestations of one and the same constitutional taint; and that they depend upon the circulation of a peculiar specific *materies morbi* in the blood. He says:]

"No one doubts now that cancer is the resultant of a pre-existing general contamination, or imagines that it can be produced when that contamination is not. And why have they arrived at this conclusion? Simply because of the thousands exposed to the exciting causes, a few, and a few only, become thus affected. Scirrhus of the lower lip appears to originate, sometimes from the irritation caused by the pipe; but millions smoke every hour of the day, and retain their lips intact. Blows on the female breast are common enough, but the number of carcinomatous mammæ thus produced is vastly inferior.

"Precisely in the same way, fever, and emaciation, and prostration of strength, and absolute inanition, may occur, and do occur, in countless cases, where tubercle, from the beginning to the end, never makes its appearance. The marasmus in phthisis, extreme though it be, is surpassed by that which we observe from scirrhus of the stomach, and yet in the latter disease we never find tubercles. A man may be reduced to a mere skeleton, and die of absolute starvation, from total inability to digest his food, or from its unwholesome nature; and yet, though nutrition is here entirely suspended, the peculiar morbid product, of which we are speaking,

is not evolved. While in another case, the body still remaining comparatively well nourished, and the digestion proceeding to all appearance with due regularity, the lungs or other organs contain it in abundance.

"Again, tubercle wherever found, presents the identically same characters. Take it from what part of the body you may, and when examined by the microscope, it will be found to consist of the same elements, the only difference being in the intermixture of the proper tissues of the part. This is inconceivable, if we suppose it to be nothing more than an imperfect form of the natural elements of half-generation, if I may so call it, of the healthy texture. It is quite conceivable that nerve-tubes may not be completely developed, and so fail in the exercise of their proper functions; or or that bonecells may not elaborate a right secretion, and the structure which they build up be thus abnormally constructed. But it is hard to understand how the arrest, or the imperfection of these ordinary vital workings, should educe a structure totally different from the natural ones, and absolutely the same in two such diverse localities, unless there be some one special influence brought to bear on both alike.

"Yet again. Tubercle is often coetaneously deposited in many parts of the body, as is evidenced by its being found there in precisely the same stage of progress. Louis relates an interesting case of this kind, in which there were crude tubercles in the same stage of development, in the neck, the right axilla, the mesentery, the loins, the spleen, the brain, and the cerebellum: and he very justly remarks, 'I really do not understand how this fact can be accounted for, unless by admitting the agency of one and the same cause, acting at one and the same time upon all these parts.'"

In poison-diseases, we find a tendency in certain organs of the body to become affected, evidently from a natural tendency in the living body to get rid of injurious matters, whether introduced from without, or generated within. Of the former, the diarrhœa from errors in diet is an example; of the latter, the excretion of sugar by the urine, of urates and uric acid, of many medicinal agents, as ferrocyanide of potassium, sulphuret of potassium, sulphocyanide of potassium, iodine, various organic acids, arsenic, tartarised antimony, all of which have been found to be eliminated by the kidneys. MM. Danger and Flandin state, that arsenic escapes by the lungs, liver, and skin; and Mr. Herapath and Dr. Taylor have found it in the liver. The presence of certain organic substances has been detected in the urine, as the *amanita muscaria*, opium, belladonna, hemlock, &c., the effects of which are communicated to other animals, on the fluid being administered to them. Dr. Percy has shown, that in cases of poisoning by alcohol, that the fluid may be found after death in the brain, liver, blood, bile, and urine. It would appear likely, then, that the local changes are caused either by the action of the morbid poison itself upon the parts to which it is derived, or by the undue activity of those parts, in their efforts to eliminate the offending matter. The effects of the poison of lepra, and of the exanthemata, on the skin, are examples of this; as are also the abdominal complications in typhus fever, arising from an over-excitement of the intestinal glandulæ, whose function is probably to get rid of putrecent matters, and the occurrence of diarrhœa and inflammation, and ulceration, in scrofula and phthisis. These are all evidently analogous. The perspirations in consumption are probably like those of intermitting fever and rheumatism, attempts to get rid of the morbific matter from the system. Fatty liver arises from the excess of a normal ingredient: how is it produced? The livers of geese are made fatty in France, by shutting the animals up without food, in close cages, exposed to a gradual heat. Emaciation takes place, and the liver increases in size, and becomes fatty. And, in the non-phthisical cases of fatty liver, extreme wasting has been observed. Hence it is partially explained by the removal of adipose matter from other parts of the system. But emaciation is not always attended by fatty degeneration of the liver; hence another cause must be sought. When fatty liver

occurs in persons not affected with tubercle, they have been the subjects of some blood disease, as cancer or pemphigus, or of extensive suppuration. Moreover, the abnormal presence of fat is an evidence of a process of degeneration; and, therefore, its existence in tubercle is one of the many proofs that this morbid product arises from malnutrition. The lesion under consideration can be brought under the same general law of analogy, in the following way:—"The specific poison acting at all parts, interferes with the healthy elaboration of every tissue. As a consequence of this, fat is found in excess, and where it does not naturally exist. This fat, absorbed into the blood in large quantities, is laid hold of by the hepatic cells, which have a natural affinity for it. It is taken up by these for the purpose of excretion, but the supply is greater than the demand, and it therefore accumulates in the new position. There is here a perfect analogy with that which we have supposed to occur in the intestinal glandulæ." The presence of tubercle in the lungs, Dr. Madden explains, by supposing the poison brought to them by the blood, to exercise a specific modifying influence on their nutrition; or (which he supposes a more satisfactory interpretation), that the general law is here followed, by which particular matters are attracted to, and retained in certain organs and tissues. The localisation of the disease in the apex of the lungs is more difficult of explanation; but it is evidently analogous to the symmetrical distribution of other affections, as noticed by Dr. Budd, the peculiar action of chlorine acids on the heart, observed by Mr. Blake, or the action of strychnine on the *true spinal system*. And the greater frequency of tubercles in the left lung is analogous to what is observed in cancer, that the right breast and the lower lip are the most commonly affected. These evidences of selection, like what we see in the effects of other poisons, are confirmatory of of the doctrine of the poison-origin of phthisis; and other resemblances may be found in the period of latency, and in the exaltation of the activity of the poison, by depression of the vital energies. Another general law, applicable to phthisis in common with the results of other poisons, is the tendency of poisonous matters to accumulate, in considerable quantities, in the part to which they are determined. And it is remarkable, that parts organically damaged, either by mechanical injury, or antecedent inflammation, are specially liable to become the seat of tuberculous deposition, or of the manifestation of any other poison, as small-pox.

[Our objects in the treatment of phthisis must be, Dr. Madden says, to neutralize the poison or procure its elimination, to restore the function of nutrition to a healthy state, to check undue local excitement, so apt to occur during the process of elimination, and to support the strength of the system. In acute phthisis, Dr. Madden considers mercury valuable; he combines it with salines, especially nitrate of potash, and gives tonics as soon as the symptoms allow. Dr. M. has great confidence in cod-liver oil.]

London Journal of Medicine, April, 1849, p. 328.

34.—ON THE USE OF COD-LIVER OIL IN PHTHISIS PULMONALIS.—By Dr. C. J. B. Williams, F.R.S., Professor of Medicine in University College, London, &c.

[Dr. Williams has taken notes of two hundred and thirty-four cases of phthisis, (out of a much larger number,) in which he has prescribed cod-liver oil; and states that in two hundred and six of these cases, its use has been followed by unequivocal improvement, varying in degree from the mitigation of distressing symptoms up to an apparently complete restoration to health. Marked and lasting improvement has most frequently taken place, Dr. Williams tells us, in patients in the second stage of the disease, when softening of the tuberculous deposit was beginning to take place. He says:]

The effect of the cod-liver oil in most of these cases was very remark-

able. Even in a few days, the cough was mitigated, the expectoration diminished in quantity and opacity; the night-sweats ceased; the pulse became slower and of better volume; and the appetite, flesh, and strength were gradually improved. The first change manifest in the physical signs was generally a diminution and gradual cessation of the crepitus; the breath-sound becoming drier and clearer; but the dulness, and tubular character of the breath and voice-sounds were much more persistent, and rarely exhibited a marked decrease, until after several weeks' use of this remedy, in conjunction with regular counter-irritation. The tubular sounds, in fact, frequently became louder at the first removal of the crepitus, which in phthisis as well as in pneumonia, tends to mask the signs of consolidation. In several instances, however, in which I have had the opportunity of examining the patients under treatment, at several successive intervals of a month or six weeks, the gradual removal of the consolidations has been unequivocally proved, by the restoration of clearer vesicular breath and stroke-sounds to the affected spots. In several cases, in which the disease has existed long, the restoration has never been perfect; even where the health has been completely re-established, and all common symptoms of disease have entirely disappeared, there have remained perceptible inequalities in the breath and stroke-sounds; generally, with prolonged expiratory sound, which has more or less of a tubular note towards the root of the lung of the same side. These signs, if unaccompanied by decided dulness on percussion, I have learnt by the experience of many years, not to consider as exceptional against recovery, for they appear to be dependent on the puckering of the texture, often with pleural adhesions and old deposits in the bronchial glands, so frequently found after death at the summits and near the roots of the lungs of persons who have not for many years exhibited symptoms of any pectoral disease.

As might be anticipated, a large number of the phthisical patients for whom I have been consulted, have been in the first stage of the disease, in which the tubercles or deposits are in the solid state. In these cases also, I have largely used the cod-liver oil, and, so far as I have ascertained them, with not less satisfactory results.

The physical signs of improvement are precisely the same as those which take place tardily in the second stage after the removal of the humid rhonchi; and in truth, the treatment by the oil combined with counter-irritation, where successful, seems to bring back the lungs from the second stage, that of incipient softening, to the first stage, that of simple deposit, which is tardier in its changes of increase or diminution, and may remain long stationary without any obvious alteration. The same remark is applicable to the chronic products of inflammation of the lung, which, as is known to the profession, I consider to approximate in nature to the higher class of tuberculous deposits.

The most striking instance of the beneficial operation of cod-liver oil in phthisis, is to be found in cases in the third stage,—even those far advanced, where consumption has not only excavated the lungs, but is rapidly wasting the whole body, with copious purulent expectoration, hectic, night-sweats, colliquative diarrhœa, and other elements of that destructive process by which, in a few weeks, the finest and fairest of the human family may be sunk to the grave. The power of staying the demon of destruction, sometimes displayed by the cod-liver oil is marvellous.

[After relating several cases of tuberculous lung-disease in an advanced stage, in which the use of the oil combined with counter-irritation gave rise to the most decided improvement, Dr. Williams says:]

The results above stated give to cod-liver oil, even as a tardative or palliative in phthisis, a rank far above any agent hitherto recommended, whether medicinal or regiminal. I have made extensive trials of several other medicines of reputed utility in this disease, and on a future occasion may lay before the profession the results of my experience, which prove

some of these agents to be by no means inoperative or useless; and I still consider them to be often salutary aids in the treatment of this formidable malady, but their utility and harmlessness fall so far short of those of the cod-liver oil, that I regard them now chiefly as subsidiary means, and the more likely to be useful, in proportion as they facilitate the exhibition or continuance of this superior agent.

If the experience of the profession at large should accord with my own, and with that of those who have preceded me in recommending the cod-liver oil, our prognosis with regard to phthisis must undergo some modification. To what extent this modification may reach, cannot be determined, until such cases as those which I have recorded have been tested by years of time; but even now, when we repeatedly find forms and degrees of disease, that former experience had taught us to be utterly hopeless and speedily fatal, retarded, arrested, nay sometimes even removed and almost obliterated by various processes of restored health, we must pause ere we, in future, pass the terrible sentence of "no hope" on the consumptive invalid.

Mode of operation of cod-liver oil.—It seems scarcely necessary to discuss the question, whether the oil owes its efficacy to the iodine which it contains. The amount of this element is so minute as hardly to admit of quantitative measurement; and to ascribe virtue to such infinitesimal fractions, when ordinary doses have no corresponding activity, is to adopt the fanciful and mischievous speculations of the homœopathist, which cannot be too strongly deprecated by the scientific and conscientious practitioner. Several of the patients whose cases are cited, and many more of whom I have records, had taken iodine in various combinations before taking the oil, but without any effects approaching to those which ensued on the change of treatment. I am by no means incredulous of the salutary operation of iodine in some forms of tuberculous and scrofulous disease; indeed until I used the pure oil, I considered it to be the most useful remedy; but in the last two years, the oil has so far surpassed it and every other medicine in beneficial operation, that I am convinced that it acts by a virtue peculiar to itself.

A perusal of the foregoing cases, and of others on record, at once suggests that the cod-liver oil is a highly nutrient material; and it is commonly admitted by all practitioners who have used it, that it possesses, in a pre-eminent degree, the property of fattening those who take it for any length of time. But its nourishing influence extends beyond the mere deposition of fat in the adipose tissue. The muscular strength and activity are sensibly and sometimes rapidly increased under its use; whilst the improved colour of the cheeks and lips implies a filling of the vessels with more and better blood. Researches are wanted, to elucidate this subject more clearly; but the analysis of the blood in one case of phthisis which had been under treatment by the oil, showed a most remarkable increase of the animal principles of the blood, especially the albumen, which amounted to thirteen per cent., being nearly double its usual amount, whilst the fat was not materially augmented; and the fibrin, which is generally high in phthisis, was reduced below the normal proportion. If these results should be confirmed by further observation, there will be no difficulty in understanding that the cod-liver oil should prove a nutrient to all the textures; although it may yet be a question, whether it does so by direct conversion into albumen or fibrin, or by preventing the waste of the albuminous principles by protecting it from the action of the oxygen absorbed in respiration.

But there is much reason to believe that the oil itself proves serviceable in supplying the fat molecules which appear to be essential to healthy nutrition, as forming the nucleoli of the primary cells or rudiments of tissues. The important part which fat thus performs in the process of nutrition, was first pointed out by Ascherson of Berlin; and that fat forms the

central molecules of the elements of granules and cytoblasts of textures, is generally admitted, though few agree with Ascherson in his opinion that the fat forms the cells by its power of coagulating albumen around it. It seems to have been the opinion of Dr. Ascherson and of Dr. Hughes Bennett, who cites it. that in scrofulous diseases there is a want of this fat, and that the albumen derived from the food in digestion is liable to be precipitated in an unorganized condition (as tubercle, etc.) for the lack of it. But it is now well ascertained that scrofulous and tuberculous deposits, so far from being deficient in fatty particles, contain them in greater quantity than exists in the blood, or in its plasma in a healthy state. The explanation which I have given of the chief salutary action of the cod-liver oil, is not that it supplies fat where it is wanting, but that it supplies fat of a better kind, more fluid, more divisible, less prone to change, and more capable of being absorbed into, and of pervading, the structures of the body; thus affording a fine "molecular base" in the chyle, and therein, a material for a better plasma; and being conveyed into the blood distributed through capillaries and around deposits (in such quantity as to soften and dissolve the crystalline and irregularly concreted fat scattered through them), it renders them more amenable to the processes of reparation and absorption. Hence its beneficial operation is more marked in those stages of tuberculous disease in which the deposits abound in fat: that is, at the period of maturation and softening; although from the extent of mischief already done, both to the part and to the system, the benefit may not be so lasting as in the early stages of the disease.

One of the most remarkable effects of the cod-liver oil, in some cases of the second and third case of phthisis, and in other forms of scrofulous disease with extensive suppuration, is the speedy removal of the sweats and other symptoms of hectic fever. This can hardly be ascribed to its direct nutrient powers; but I think that it is due to its influence in diminishing the unhealthy suppuration which is excited around the softening and excavated tubercles. If my views of the chemical nature of suppuration,—that it consists of a further oxydation of the exudation corpuscle,—be correct, then it is quite intelligible that the presence of so highly combustible a material as oil must check this process of oxydation, and thus prevent the degeneration of the corpuscles into the aplastic pus globules.

In fact, if it should prove to be correct, according to the analysis above quoted from Simon, that cod-liver oil removes the excess of fibrine in the blood of phthisical patients—this also equally accords with my notion, founded on the inferences of Mulder and others, that the formation of fibrine is due to a process of oxydation of the albumen (forming a deutoxide of protein, according to Mulder;) and that, by preventing this, the oil removes that tendency to cacoplastic inflammatory deposits which largely contribute to increase the consolidation of the lungs and other organs in phthisical subjects.

In making these surmises, I would not be supposed to adopt the idea of Liebig, that pulmonary consumption is the result of an excess of oxygen in the blood at large, consuming its materials and those of the textures. Many of the symptoms, as well as the organic lesions of the disease, show that there is a great deficiency in the process of respiration by which oxygen is supplied to the blood; and some of the most rapidly fatal cases, exhibiting speedy emaciation, are, throughout their course, in a condition bordering on asphyxia. Here is obviously a great want of oxygen in the blood—nay I believe, the excess of fat in the liver, and in the tuberculous deposits, in these instances, to be caused by this very scanty supply of oxygen to the system. But although it is deficient in the system, enough oxygen comes into contact with the exudations from cavities in the lungs, and from the diseased bronchi in their vicinity, to effect the formation of much unhealthy pus; and it is the formation and reabsorption of this that seems to excite the hectic of phthisis, as well as to keep up much harrass-

ing local irritation. Now, I believe it to be by diminishing these exudations, and checking their further oxydation into pus, that cod-liver oil acts so promptly in reducing the hectic sweats and purulent expectoration of phthisis, which accellerate and aggravate its destructive progress.

The limits of this paper will allow me to notice but briefly one more point in regard to the action of cod-liver oil. Unlike other oils or fats, it rarely disorders the stomach or bowels, or disturbs the functions of the liver. If taken in any quantity, vegetable oils commonly purge, and animal oils turn rancid in the stomach, causing heartburn, billious attacks, and even jaundice. On the contrary, cod-liver oil generally improves all the chylopoietic functions, and distinctly promotes the action of the liver; so that, as in several of the cases above related, the appetite and power of digestion are restored, and patients are enabled to take an amount and variety of food beyond what they were accustomed to, even in health. I cannot help thinking, that this peptic influence of the oil is due to its containing some biliary principle, which both favors its divisibility in the process of digestion, and promotes the natural secretions of the liver. The flow of bile, as indicated by the colour of the fæces, is generally free and uniform during its exhibition; and I must not omit to notice another fact, which I believe to be connected with increased activity of the liver. I have in numerous instances remarked that the bulk of the liver (as determined by percussion) becomes augmented during its use; yet without tenderness or any other sign of disorder. In fact, this seems to be a kind of useful hypertrophy, induced by the oil augmenting the bulk and quantity of the hepatic cells, and supplying at once a material the more fitted for this secretion, because it has already within it some elements of biliary matter which served a similar purpose in the liver of the fish, and this at a lower temperature, and less favourable to the activity of the process. The observation of this influence of cod-liver oil has led me to use it in several cases of functional and structural disease of the liver, marked by defective or depraved secretion, and in some instances with most satisfactory results, especially in one of habitual formation of gall-stones, which had resisted all kinds of treatment, and was rapidly destroying the health; the use of the oil has entirely stopped the attacks, and has restored the patient to good health.

It appears probable, therefore, that although other oils might be equally influential in promoting nutrition, and in preventing and removing the cacoplastic and aplastic exudations of scrofulous subjects, the oil from the cod's liver, and perhaps those from the livers of other fish, have the advantage in point of digestibility, and in promoting the action of the digestive and biliary organs.

In all instances I have prescribed oil as *free from taste and smell as could be procured:* and so little difficulty has been experienced in its administration, that the proportion of cases in which it has decidedly disagreed has not amounted to four per cent.

The inoffensiveness of the oil implies the use of no process by which it can be deprived of its proper qualities. All that is required is, to obtain it *pure and fresh*, as it existed in the hepatic cells of the healthy fish when alive, without contamination by any process of putrefaction, roasting, boiling, or the like.

My usual mode of administering cod-liver oil, is in doses of a teaspoonful, gradually increased (if the stomach bear it) to a table-spoonful, floating on some pleasant-flavored liquid, such as diluted orange-wine, or the infus. aurantii comp., with a little tinct. and syr. aurantii. The vehicle should be suited to the taste and stomach of the patient; and much of our success in exhibiting the medicine will depend on our being able to keep the palate and stomach at peace with the oil. In numerous instances I have found that the addition of a little diluted nitric acid to the vehicle will make it more grateful to the palate, as well as serviceable to the stomach; and we

may often combine with it other medicines which are not disagreeable, and thus fulfil the indications of palliating symptoms by their means. The fittest time for taking the oil is from one to two hours after the three first meals of the day. At this time the chyme is beginning to pass from the stomach into the duodenum; and it would appear that the oil passes quickly with it, for given at this time it causes none of those unpleasant eructations which are apt to occur when it is taken either before or with food. There is nothing in the oil for the stomach to digest; and the less it is brought into contact with it, and the sooner it passes out of it, the better. When it mixes with bile and pancreatic juice in the duodenum, its division and absorption begin and proceed, as in the case of all fatty matters. Herein, too, we see a reason why the oil does not agree so well either with the palate or stomach, when mixed in an emulsion, or combined with liquor potassæ, as recommended by some practitioners.

In conclusion, I repeat, that further observations, and longer time, are requisite to determine with accuracy the extent to which this agent can control or remove tuberculous disease of the lung; but I would state it as the result of extensive experience, confirmed by a rational consideration of its mode of action, that the *pure fresh oil from the liver of the cod, is more beneficial in the treatment of pulmonary consumption than any agent, medicinal, dietetic, or regiminal, that has yet been employed.*

Journal of Medicine, Jan. 1849, *p.* 1.

35.—ON THE CHEMISTRY OF COD-LIVER OIL.—By Dr. Jonathan Pereira.

[The following observations communicated to the Pharmaceutical Journal by Dr. Pereira, are principally from the researches of De Jongh:]

De Jongh made a very elaborate analysis of three kinds of cod-liver-oil:

1. *Pale cod-liver oil.*—Golden yellow; odour not disagreeable; not bitter, but leaving in the throat a somewhat acrid fishy taste; reacts feebly as an acid; sp. gr. 0·923 at 63° ·5 Fahr. Cold alcohol dissolves from 2·5 to 2·7 per cent. of the oil; hot alcohol from 3·5 to 4·5 per cent; in ether it is soluble in all proportions.

2. *Pale brown cod-liver oil.*—Colour, that of Malaga wine; odour not disagreeable; bitterish, leaving a slightly acrid fishy taste in the throat; reacts feebly as an acid; sp. gr. 0·924 at 63° ·5 Fahr. Cold alcohol dissolves from 2·8 3·2 per cent. of oil; hot alcohol, from 6·5 to 6·8 per cent. Ether dissolves it in all proportions.

3. *Dark brown cod-liver oil.*—Dark brown, by transmitted light greenish, in thin layers transparent; odour disagreeable, empyreumatic; taste, bitter and empyreumatic, leaving behind, in the fauces, an acrid sensation; reacts feebly as an acid; sp. gr. 0·929, at 63° ·5 Fahr. Cold alcohol dissolves from 5·9 to 6·9 per cent. of it; hot alcohol from 6·5 to 6·9 per cent. In ether it is soluble in all proportions.

De Jongh found the constituents of these oils to be *oleate* and *margarate of glycerine*, possessing the usual properties. But they also contained *butyric* and *acetic acids*, *the principal constituents of the bile* (bilifellinic acid, bilifulvin, and cholic acid), *some peculiar principles* (among which was the substance called *gaduin*), and not quite one per cent. of *salts*, containing iodine, chlorine, and traces of bromine. Moreover, he found that the oils contained free *phosphorus*.

The *pale* oil is richest in oleic acid and glycerine; the *brown* oil contains the largest amount of margaric, butyric, and acetic acids, and of the substances peculiar to cod-liver oil; and the *pale-brown* oil is richest in iodine and saline matters. The genuineness and purity are known partly by physical and partly by chemical tests.

The *physical characters* are colour, odour, and flavour. The finest oil is most devoid of colour, odour, and flavour. The oil in the cells of the fresh

liver is nearly colourless, and the brownish colour possessed by the ordinary cod-oil used by curriers is due to colouring matters derived from the decomposing hepatic tissues and fluids, or from the action of air on the oil. Chemical analysis lends no support to the opinion, at one time entertained, that the brown oil was superior, as a therapeutical agent, to the pale oil. If patients could conquer their aversion to the brown oil, its free use, like that of other rancid and empyreumatic fats, would often disturb the digestive functions, and be attended with injurious effects.

Of the *chemical characters* which have been used to determine the genuineness of cod-liver oil, some have reference to the iodine, others to the gaduin, or to the bile constituents. Iodine, or iodide of potassium, added to train oil, to imitate cod-liver oil, may be readily detected by adding a solution of starch and a few drops of sulphuric acid, by which the blue iodide of starch is produced; or the suspected oil may be shaken with alcohol, which abstracts the iodine. But though we may thus readily prove that the suspected oil contains no artificially added iodine, the iodine which is naturally contained in, and more intimately combined with the oil, may be frequently recognized by another process. Marchand gives the following directions for detecting it:—Saponify the oil with soda, carbonize the soap thus obtained, digest the coal in distilled water, add a drop of starch paste, and subject the mixture to the action of a voltaic battery, the positive pole being placed in contact with the starch paste, the negative pole with the solution. If iodide be present, the starch becomes blue. Marchand states that by this test, the iodine can be detected in the urine of a patient soon after he has taken the oil. This, however, is certainly not always correct; for I submitted the urine of a young gentleman, who, for several weeks, had taken with great benefit a table-spoonful of cod-liver oil thrice daily, to the action of a galvanic battery of fifty pairs of plates for several hours, without obtaining the slightest evidence of the presence of iodine.

Sulphuric acid has been employed as a test for cod-liver oil. If a drop of concentrated sulphuric acid be added to fresh cod-liver oil, the latter assumes a fine violet colour, which soon passes into yellowish or brownish-red. Some samples produce at once the red colour, without the preliminary violet tint. It has been erroneously supposed by some persons that this violet colour was due to the evolution of iodine, by the action of the acid on an alkaline odide contained in the oil. If that were the case, the presence of a little starch-paste would be sufficient to convert the violet into an intense blue colour, which is not the case.

The colouration in fact depends on the action of the sulphuric acid on some one or more organic constituents of the oil, and the following facts lead me to infer that it is in part due to the presence in the oil of one of the constituents of the bile. In 1844, Pettenkofer pointed out a new test for bile. If to a liquid supposed to contain bile, about two-thirds of its volume of oil of vitriol be added, the liquid kept cool, a few drops of a solution of cane-sugar (four or five parts of water to one of sugar) be added, and the mixture shaken up, a violet red colour is produced, provided bile be present. This test succeeds very well, if we dissolve a little extract of ox-bile in water, and test the solution with sugar and oil of vitriol. The colour developed agrees with that produced by the addition of oil of vitriol to cod-liver oil, which De Jongh has shown, contains the essential constituents of the bile. Pettenkofer remarks, that the presence of a very great excess of chlorides will change the violet-red colour into a brownish-red. This fact is deserving of notice, because it may aid in accounting for the fact that some specimens of cod-liver oil strike a brownish red, not a violet-red colour, with oil of vitriol.

Strecker confirms Platner's observation that both cholic and paracholic acids produce the same colour with sugar and oil of vitriol, as bile does; so that Pettenkofer's test doubtless acts on one or both of these acids. Now De Jongh has shown that cholic acid is contained in cod-liver oil, and we

have, therefore, good reason for believing that it is in part by the action of oil of vitriol on this acid, that the violet-red colour is produced. For the development of this colour in bile, it is necessary to use, besides oil of vitriol, a third agent (sugar.) For cane-sugar we may substitute grape-sugar, starch, or any substance which can by the action of oil of vitriol, be converted into grape-sugar. No such substance has hitherto been detected in cod-liver oil, and, therefore, it may be said the necessary ingredient to produce this characteristic reaction of oil of vitriol on cholic acid is wanting. Strecker has recently supplied the wanting link. In his valuable paper on ox-bile, he observes that acetic acid may be substituted for sugar. To the liquid supposed to contain bile, add a few drops of acetic acid, and then concentrated sulphuric acid, when a magnificent purple-red colour is developed. If the quantity of bile be small, it may be necessary to use heat. Now, as cod-liver oil contains acetic acid, we have the requisite agent to enable the oil of vitriol to act on the cholic acid, and the development of the purple or violet-red colour is then readily accounted for. I have already noticed the red colour produced by the action of oil of vitriol on gaduin (supposed by Berzelius to be derived from the bile.) Here, then, is another source for the red colour caused by the action of sulphuric acid on cod-liver oil.

Sulphuric acid, then, is a test for liver oils. It does not distinguish one liver from another: neither does it distinguish good cod-liver oil from bad, for it produces its characteristic re-action both with common brown cod-oil, and with the finest and palest qualities. But it serves to distinguish oil procured from the liver, from oil obtained from other parts of the animal.

London Journal of Medicine, March, 1849, *p.* 288.

36.—CARBONIC ACID A CURE FOR PHTHISIS.

In the Annales de la Societié Medicale d'Emulation de Boulers there are two curious cases of phthisis pulmonalis cured under the following circumstances:—A man affected with the third stage of tuberculization, lived in a damp room in which for some time the grate was filled only with green wood, that disengaged carbonic acid in such a large quantity as to occasion very unpleasant effects with all the patient's family, such as headaches, loss even of sense occasionally, but not so to the patient himself. His family medical attendant, Dr. Tschikarewyski, had given him over, yet, to his astonishment, he observed his patient's symptoms lose, from day to day, their serious character, and as his respiration became more and more free the greater was the quantity of carbonic acid apparently disengaged in his apartment, so as to make his medical attendant consider them in the light of cause and effect. One thing was certain, that the patient's strength improved daily; the fever, night-sweats, and diarrhœa disappeared; the purulent expectoration became catarrhal; his appetite returned, as also his healthy sleep, and gradually all his functions were restored to perfect health in six months. Dr. T. had soon an opportunity of putting this chance lesson into practice with another patient in confirmed phthisis, who had frequent hæmoptysis, constant cough, with purulent expectoration, nightsweats, sanguineous diarrhœa, &c. The patient was placed in a damp room with a brazier of burning charcoal. Every day he was subjected for thirty or forty minutes to the vapour disengaged from it. Every time he respired this vapour his respiration became more free, and he experienced a very peculiar feeling of relief. In about four weeks from the commencement of the treatment, his strength had evidently improved, the symptoms lost their serious character, and finally, as in the preceding case, the symptoms of phthisis disappeared, not to return. In the notes which detail these cases, it is mentioned that another Russian physician, Dr. Sokslow, cured several well-marked cases of phthisis by the same treat-

ment. Dr. S., however, remarked that the vapour of carbon completely failed in cases complicated with effusion into the pleura or pericardium; as likewise in those cases of phthisis with which there coexisted hepatization of the lung, or hypertrophy of the heart.—*Journal de Medecine.*

Dublin Medical Press, Jan. 31, 1849, p. 71.

37.—ON THE USE OF THE SEEDS OF PHELLANDRIUM AQUATICUM IN PHTHISIS AND CHRONIC BRONCHITIS.—By M. SANDRAS.

In our Number for July we quoted M. Michea's testimony in favour of this substance; and since then M. Sandras has published the results of a careful investigation into its merits, conducted during eight years at the Beaujon. He speaks of it in the highest terms of praise as a palliative of the most distressing symptoms of phthisis; and believes that occasionally it even exerts a curative agency, and, at all events, indefinitely postpones the progress of cases which furnish all the symptoms of incipient tubercle. He is, however, fully aware how deceptive these symptoms often are, and speaks with due caution on this point. The important agency of the seeds, however, in relieving suffering in undoubted and advanced cases of the disease seems certain; the days of the sufferer not only being considerably prolonged, but his path to the grave materially smoothened. The good effects generally manifest themselves in from a week to a fortnight, by a diminution of fever and diarrhœa, a return of appetite and sleep, less dyspnœa, and an easier cough, so that the patient often supposes himself nearly well. The strength is supported in this way for a considerable longer period than it otherwise would be; and when at last it finally gives way, the course of the disease then becomes very rapid. *Chronic bronchitis* is obviously and speedily modified advantageously by this medicine. It is especially indicated in that form which comes on in aged persons in cold damp weather, and persists until this changes; and in young lymphatic subjects, deficient in reactive power, it cuts short the tedious cough left by colds. M. Sandras has found it of no avail in emphysema and nervous asthma, except inasmuch as these were connected with chronic bronchitis.—*L'Union Medicale, No.* 134. *Brit. and For. Med. Chir. Rev., June, 1849, p. 279.*

38.—ON THE ASTHMA OF OLD PEOPLE.—By Dr. G. E. DAY, Physician to the Western General Dispensary, &c.

[Pure nervous asthma is said to be hardly ever met with in old people; asthma in them, according to Dr. Day, depending either on organic change in the heart or lungs, or on impurity of the blood. The latter is thus described by Dr. Day:]

I proceed to the subject of *cachectic Asthma*, an affection that seems to have been almost altogether overlooked by English practitioners, although of very common occurrence. The impurities contained in the blood seem here to be the exciting cause of the paroxysm. There is an attempt on the part of nature to make the bronchial mucous membrane eliminate the effete matter of the blood in the form of expectoration. Asthma is very often associated with a deficient or morbid action of the kidneys. I have seen so many cases of this form of asthma, that I cannot doubt the intimate connexion between the state of the respiration and the morbid condition of the kidney, and, for the sake of convenience, shall term this *urinous asthma*. The term has been already used by Schonlein, Canstatt, and other continental writers.

Urinous asthma seldom occurs before the sixtieth year, and is most common at and beyond the seventieth year. On examining a patient with this affection, we usually find a general suppression of the secretions, the skin

being dry and rough, and the bowels acting slightly about twice a week. The urine is scanty, rather turbid, of a reddish-brown colour, and so acrid as to produce a sensation of scalding in the urethra, and to give rise to frequent calls to make water. There is usually a feeling of dull deep-seated pain about the loins. The skin is the seat of intolerable itching and presents the appearance of prurigo, which, like the asthma, arises from the retention of the urinary constituents in the blood. The eyelids are red, and discharge an acrid humour, and ulcers often form on the lower extremities. The paroxysm of asthma usually occurs an hour or two before midnight, and lasts some hours, terminating most commonly in a copious expectoration of viscid and very salt mucus, which frequently has a strong urinous odour.

Another cachectic form of asthma is connected with the gouty diathesis. It sometimes comes on as early as the fiftieth year, in persons suffering from asthenic or anomalous gout. The premonitory symptoms are the same as those of a fit of regular gout. The patient is led by these symptoms to expect a fit of gout; but instead of this he is seized, usually about midnight or a little before, with a feeling of intense and terrible suffocation. The paroxysm lasts, with slight remissions, for some hours, and towards its close a considerable amount of thick mucus, frequently mixed with blood, is ejected. The fit is often succeeded by other efforts to depurate the blood by copious sweats, urinary sediments, &c. If they do not occur, a second paroxysm of asthma may be shortly expected.

[*Brit. and For. Med.-Chir. Rev., April*, 1849, p. 461.

39.—CASES OF ASTHMA SUCCESSFULLY TREATED BY CHLOROFORM.—By J. M. Beardsall, Esq., Worksop.

[The first case related is that of a clergyman, who had suffered from spasmodic asthma for six years.]

June 20th.—He had been suffering from difficulty of breathing for the last three weeks. From very slight exertion, and perhaps some nervous anxiety, the breathing was very much distressed; pulse slightly irregular, and about 120. A drachm of chloroform was administered on lint, covered with oiled silk. In less than two minutes, a very evident effect was produced; two or three very deep inspirations took place. The patient said "Don't disturb me," and he was suffered to remain quiet for five minutes, when he entered into conversation, saying "His breathing was much relieved." The pulse was now lowered to 84. It was thought advisable to exhibit half a drachm more of the choloform; the effect was admirable; the patient reclined in the easiest attitude imaginable on a sofa, breathing most quietly, and saying "I can hear, but don't wish to talk." He remained quiet for several hours. The next morning there was most copious expectoration.

22nd.—I received the following note from him:—"I have continued to breathe most satisfactorily since I saw you, and was able to walk up two of the steepest hills between here and Chesterfield, to-day, without being distressed."

26th.—On Saturday evening, June 24th, there was difficulty of breathing, and the patient, residing four miles from me, had recourse to his usual means to prevent an attack, which were so far successful that he got through his duties on Sunday.

This morning (the 26th) the difficulty of breathing having increased, he drove gently down to my house, where he again inhaled a drachm of chloroform. The effect upon the pulse was not so marked as on the former occasion, upon the breathing it was quite as satisfactory. After having inhaled for a short time, he exclaimed, "It's wonderful!" and began to breathe more quietly; he was not quite unconscious, but evidently nearly so. Af-

ter the lapse of ten minutes, he inhaled half a drachm more of chloroform; this produced, for a short time perfect unconsciousness, and he dozed for nearly an hour. Expectoration supervened the following morning, but not so copiously as in the first instance.

July 17th.—I have seen the patient to-day, and he is breathing most satisfactorily.

[*Case* 2.—Martha K., thirty-four years of age, has been suffering from asthma as long as she can remember. Remedies of all kinds have been tried, but morphia only has of late afforded any relief. After much hesitation, and, in a great measure, in consequence of the results of the foregoing case, she was induced to inhale a drachm of chloroform. Previously to the inhalation the pulse was 120, small, and wiry, the breathing very much oppressed, and no expectoration. In less than two minutes after inhaling, there was slight convulsive effort in respiration when the chloroform was removed. Perfect quietude succeeded; the pulse became soft, and fell to 84. Very shortly, violent pains in the bowels was complained of. In a few minutes chloroform was again exhibited; the sedative effect was now more evident; the patient sat upright, quite unconscious, with the most placid expression of countenance; breathing natural; pulse, which, in the interval had risen to above 100, fell to 76. She continued in this state for some time, when copious expectoration supervened.

June 25th.—Last night she experienced slight difficulty of breathing on first lying down; but she has not for years got up so well as this morning, and the breathing is quite free at one o'clock P.M. The bowels moved very freely yesterday after inhalation.

July 12th.—For the last day or two there has been slight difficulty of breathing, which has been relieved by smoking tobacco, one of her ordinary remedies. During the last night it has been much increased, and to-day, she again inhaled a drachm of chloroform with quite as much benefit as before.

19th.—Up to this time there has been no return of asthma, nor has she taken morphia since the first inhalation.

Case 3.—Mr. H. P., twenty-one-years of age, has been asthmatic for several years, which he attributes to confinement during his apprenticeship.

June 27th.—The patient was much excited at the thoughts of inhaling; the pulse 120; the breathing hurried and wheezing. A drachm of chloroform was exhibited, when he very quickly complained much of suffocation. He was allowed to remain a few minutes, when he inhaled another drachm of chloroform; perfect quietness was the result, but no insensibility; the breathing changed its character from wheezing to rattling, and in the evening copious expectoration took place with considerable relief, but not to the same extent as in the other cases.

After the lapse of a week, he again inhaled a drachm of chloroform. The relief on this second inhalation was complete; insensibility for a very short time was produced; copious expectoration followed, and the patient was so much relieved, that he will gladly inhale again when his breathing becomes distressed. *Lancet, March* 31, 1849, *p.* 338.

40.—USE OF CHLOROFORM IN ASTHMA.

At the Westminster Medical Society, Nov. 27, 1847, Mr. GREENHALGH said that he had exhibited chloroform, by inhalation of forty minims from a sponge, to a gentleman laboring under attacks of spasmodic asthma, which were generally of some duration. The administration of the dose during a paroxysm almost immediately produced a profound sleep, which continued for two hours; after which the patient awoke, without any of the usual consequences of the attack. Mr. Chandler (Medical Gazette, 1847, p. 1106) relates the case of a lady who was the subject of distressing attacks of

spasmodic asthma. In one of these, he resolved to give chloroform a trial, and accordingly poured half a drachm on a sponge, hollowed to fit the face and nostrils, and held it near the face. Excitement and incoherence were at first produced, with hysterical laughter; but, on applying the sponge close to the face, these were replaced by a state of muscular relaxation and anæsthesia, the respiration gradually becoming more regular. She awoke in about four hours from the state of semi-consciousness produced by the chloroform, much refreshed; and the following morning was quiet, and had no return of spasm, and no ill effect from the inhalation. The vapour of ether had been previously tried in this case, not only without effect, but with much increase of suffering. M. Leriche, of Lyons (L'Union Médicale, 1 Janvier, 1848), administered chloroform to a young priest, who was suffering from asthma. Twenty drops were inhaled three or four times during the day, with the effect of removing the symptoms, which, with the exception of a slight return on the third day, had not reappeared at the end of the week.

London Journal, April, 1849, *p.* 361.

ORGANS OF DIGESTION.

41.—ON THE PATHOLOGY OF APHTHA.—By Dr. W. H. Willshire, Physician to the Royal Infirmary for Children.

[After mentioning the observations of Gruby, Berg, and others, respecting the vegetable nature of the exudation which occurs in this disease, Dr. Willshire observes :]

In the so-called tubercles of acne punctata, in those of tinea favosa or porrigo lupinosa, in those of small-pox, in the exudations of the bronchial tubes in certain diseases, in those occurring in the intestines in typhoid fever, in diphtheritis, and numerous other instances, the development of vegetable fungoid growths has been distinctly proved to occur. Now, I cannot believe that in *thrush*, any more than in these diseases, that this development of a vegetable organism is the essence of the disease; on the contrary, it is an example of the working of the law I have been maintaining, that, where organic matter is forced to yield to new laws and modes of life, there may constantly be found the production of such low forms of organized existence. Now, nothing is more likely, let me tell you, than that the organic cells of the exudatory products, from diseased action of the lining membrane of the mouth, forming the creamy layer, or curdy granules in muguet, or true thrush, loaded as they are, at the same time, with the remains of vegetable and animal material of the nutriment of the child, should pass into this peculiar state of decomposition, not unlike, in some respects, *fermentation*, and give rise, as the latter action does, to the production of the vegetable parasitic organism, and of which we may see analogous forms in the slime and tartar of the teeth, more especially of old persons, who are neglectful of cleanliness. I cannot, then think, with Drs. Berg and Gruby, that the disease I am speaking of is merely, in its essence, a generation of a parasitic organism, or vegetable growth, dependent upon whose propagation, and nothing further, the local disturbance in the mouth depends; but rather, that the affection consists in, first, a general disturbance of digestive functions, next, in a diseased action of the vessels of the mucous membrane, of the oral cavity, which results in *exudation*, or a peculiar deposit, which, becoming mixed with the organic matter of the nutriment of the infant, retained amidst its cells and crevices, passes into a state of *decomposition*, an effect of which is, in part, the formation, by these cells, of a new form of life—the minute vegetable found.

I must yet detain you upon a few points connected with this matter. It may be asked, how far the *continuance* and *progress* of *thrush*—though differing in its *origin* from that assumed by some continental pathologists—

may yet be dependent upon or influenced by a progressive re-production of this vegetable growth, merely from its own sporules, the parent plants once having been generated, no matter how; the primary disease giving birth, as it were, to another one, which then acts by laws of its own. It must be known to many of you, that several German experimenters are said to have inoculated tritons, salamanders, frogs, &c., with the germinating sporules of low organized formation, and which in the result soon killed the animals, or caused their limbs to separate from the trunk through their devastating ravages; also, that several diseases, like the *muscardine* in the silkworm, are rapidly propagated, apparently in like manner, from one creature to the other. Now, Dr. Berg affirms, to the fullest extent, the contagious nature of our present malady, believing that thrush may be conveyed from one patient to another by sporules, or fragments of sporules, even in their dry state, floating in the air; and that, still more frequently, it is propagated by the bottles from which children with the thrush have been fed, or by the nipple, especially where, as in some of the children's hospitals of the continent, two infants are suckled by one nurse.

Further, Dr. Berg, by the direct experiment of applying aphthous crusts to the mucous membrane of the mouths of perfectly healthy children, produced rapidly, in every instance, analogous disease.

Again, as bearing upon the point, I may read a quotation to you from one of the most able and successful works our medical press has for many years produced—I allude to Dr. Pereira's "Materia Medica," &c. On turning to the subject of "Waters containing Organic Matters," you will meet with the following passage: "Now, it is by no means improbable that diseases may be induced in a somewhat similar way in the human subject by the use of water containing the shreds or filaments of cryptogamic plants. This suspicion is strengthened by the case related by Dr. Farre (Microscopic Journal, vol. ii. p. 189) of a woman who passed by the bowels, shreds of false membrane, but consisting entirely of confervoid filaments, probably belonging to the genus oscillatoria. The patient drank the ordinary water which supplies London, and it is not improbable, therefore, she may in this way have imbided the reproductive sporules."

Medical Times, Feb. 17, 1849, *p.* 317.

42.—ON THE TREATMENT OF OBSTINATE DYSPETIC SYMPTOMS.—By Mr. Bevan.

[Referring to an obstinate case of dyspepsia, respecting which advice had been asked, Mr. Bevan says:]

From the train of symptoms described, I perceive that this case is one such as has often come before me. Indeed, I have just completed the successful treatment of the case of a gentleman who has labored under a disordered digestion and general broken constitution for a considerable time past, but had become much worse during the last twelve months, accompanied with general pains. Under the course which has been adopted he has been perfectly restored to health. It is as follows: Pulv. jalapæ compositæ unciam; calomelanos, grana decem, cum melle rosarum electuarium fiend: cyathum minimum sumend, alteris diebus mane horis, duobis ante jentaculum. After which, to drink one tumbler of pure cold water, followed up, if possible, by exercise.

By this course, most probably the secretion of the liver will be brought to its natural colour and consistence. In three or four days then to desist from the medicines. Each night the body to be fomented with warm water before stepping into bed. Food to be taken as cool into the stomach as can be, and all fermented liquors to be relinquished, generally speaking, unless prostration of strength occur, and then merely to resuscitate. By this plan the patient will be enabled to undertake the second process—viz.,

the vapour bath, for half an hour each day, or as he can bear it, followed by the cold dash or bath, and accompanied by hand-rubbing. If the vapour bath cannot be had, a sitting bath for one hour, with frictions, beginning at the temperature of 80°. He should also bring himself gradually to drink as much pure cold water in the twenty-four hours as the stomach can reasonably bear; four or five tumblers will be sufficient. By this process the skin will probably be brought to its original healthy condition, a most essential ingredient in the means of restoring the digestive function. In all cases of this kind, the morbid condition of the liver is the immediate and prominent cause of this complaint, being, however, first produced by the deranged condition and function of the skin, which is a true respiratory organ, performing (as has been well proved) the same change on the blood as the lungs, separating the carbon and hydrogen, but which in this case, as in others, is most probably harsh and dry, or oily, clammy, and profuse, the necessary consequence of its deranged action; its function is therefore damaged, if not entirely gone, and which must be thoroughly remedied before any permanent salutary change in the digestion can accrue.

[For the same case, another gentleman recommended small doses of tincture of nux vomica.] *Lancet, Dec.* 23, 1848, *p.* 694 *and* 704.

43.—ON THE USE OF COFFEE IN INFANTILE CHOLERA.—By Dr. Pickford.

Dr. Pickford states, that from the great importance which now attaches to the treatment of cholera, he feels it to be incumbent upon him to impart to others the experience which recent opportunities have afforded him of the effects of *coffee* in the cholera of infants.

In the case of an infant at the breast, to which he was called late, to whom the usual remedies had been administered unavailingly for four days, the exhibition of coffee was attended with complete success. The incessant vomiting and purging had produced extreme emaciation: the abdomen was distended; the pulse was frequent and small; there was great restlessness, snd sleeping with the eyes half opened; convulsive motions of the eyes when awake. Carbonate of ammonia, with nourishing diet, and external stimulants, having been fruitlessly exhibited, Dr. Pickford determined to have recourse to coffee, which he knew to have been recommended as a stimulating tonic, by Dr. Dewees. He began with a small dose, a scruple, infused in two ounces of water, with one ounce of syrup, giving a large spoonful every hour. The effect was surprising; the vomiting was arrested; the evacuations became more consistent, improved in colour, and less frequent. The amendment progressed so rapidly, that by the tenth day the child was discharged as cured.

The effects were equally good in a little girl, fourteen weeks old, in whom the vomiting was not so severe, but the diarrhœa was quite as copious. In this case also coffee was given, after other means had been tried, and the patient greatly reduced. Dr. Pickford has since used this remedy in nine children of different ages, from four weeks to two years and a half. The doses have varied from half a scruple to two scruples daily. He has also administered it to children labouring under premonitory symptoms, especially where the evacuations have been very light coloured. In some cases a single dose of calomel has preceded its employment. The effect was always favourable, except in one case to which he was called too late, when the child was already sinking. He has not had any occasion to try the value of coffee in the diarrhœa of adults, having found calomel and opium of sufficient efficacy.

The benefit of coffee, especially in bilious diarrhœa, has been extolled by Lauzow and Chultze (Richter's Arzneimittellehre, vol. 1). West, in 1813, found a combination of coffee and opium very useful in the epidemic of that year. Coffee has long been employed by the common people as a remedy

(in Germany, we suppose), after excessive indulgence in spirit drinking. It is known to have the property of promoting digestion, and the action of the bowels. The purgative action of burnt coffee is attributed by Dr. Pickford to its tonic exciting properties. Like some other substances, in small doses it is capable of restraining diarrhœa, while in large doses it acts as a cathartic. The physiological explanation of this opposite effect of the same remedy is probably to be found in the condition of the motor nerves, which, being weakened, are by its moderate stimulus restored to their normal state of excitement, and thereby diarrhœa depending on their paralysis is cured. In this way, also, is explained its aperient action in larger doses on adults, by its over-stimulating these nerves, and so promoting increased movements of the intestines. This simple domestic remedy is so readily available that its efficacy deserves to be tried, and, if confirmed, madé more extensively known. Our own experience of its utility in a case of vomiting and purging which has recently presented itself to us fully bears out the author's encomiums. It is not, however, safe to draw conclusions from a single instance. *Medical Gazette, Nov.* 24, 1848, *p.* 908.

44.—ON THE USE OF NUX VOMICA IN DIARRHŒA FROM EXHAUSTION.

By Dr. Nevins, Liverpool.

Dr. N. mentioned the benefit derived from the employment of nux vomica in the treatment of the diarrhœa from exhaustion, chiefly observed in pauper patients, and especially children. In these cases he had repeatedly found no benefit from astringents and ordinary tonics, but the patients had rapidly improved under the use of the following prescription:—Alcoholic extract of nux vomica (not officinal, but prepared by most wholesale druggists), gr. ss.; rhubarb, gr. ss.; saccharated carbonate of iron, gr. j.; blue pill, gr. ss.; opium, gr. ½; made into a pill, and taken three times daily. In many cases he omitted the opium altogether.

He attributed the benefit to the influence of the nux vomica, which, by stimulating the nervous energy of the bowels, enabled the lacteals to absorb the nutriment from the food, and the large intestines to retain the fæces; whilst, at the same time, the iron acted as a permanent tonic; and the very small doses of rhubarb and blue pill improved the character of the secretions, without acting as an aperient. Improvement was generally perceptible in a few days, and he seldom had occasion to continue the prescription more than a fortnight.—*Medical Gazette, Dec.* 15, 1848, *p.* 1035.

45.—ON HÆMATEMESIS.—By Dr. Robert Dick.

Hæmatemesis, or vomiting of blood, may proceed from one or more of a variety of causes, some of these of much graver import than others. We shall enumerate some of them, and that in the order of their frequency. 1st. Vicarious, or antagonistic hæmatemesis, of which the best illustration is that owing to suppressed or too scanty catamenia. Of this, there are few practitioners but have met with cases. But, occasionally, hæmatemesis of this antagonistic kind seems to originate in the morbid plethora, from which hæmorrhoids and hæmorrhoidal discharges arise, and of which these are the more usual safety-valves, if I may use that phrase. Also, hæmatemesis seems sometimes to be vicarious of hæmorrhoids and hæmorrhoidal discharges, already periodic, but which some casualty has, for the time, suppressed.

It is difficult to determine whether mechanical or organic causes are the next most frequent inducers of hæmatemesis, as (for examples of the former) obstruction in the portal circulation, or disease of the heart, by either of which the ventricular venous system may become loaded, so as to require

to relieve itself by exudation or rupture; or (for example of the second) ulcerous or cancerous disorganization of the mucous and muscular tissues of the stomach, whereby veins and arteries are opened; with, of course, constant hæmorrhage. Aneurismal affections of the ventricular vessels come also under the latter head.

Dyscrasic hæmatemesis comes next in order. It appears to me doubtful whether, in any case, this form should be distinguished from the organic; for although, unquestionably, there are certain diatheses or diseases (as the scorbutic) in which hæmorrhage is extremely apt to occur, or rather, is extremely difficult to prevent, from both cutaneous and mucous surfaces, yet I suspect that in many or all of these cases there is disorganization more or less complete, more or less palpable, of the mucous or cutaneous surface from which the hæmorrhage proceeds; thus bringing the discharge, in part at least, under the head of organic. Therefore, I apprehend, that in all hæmatemesis other than that of mechanical origin, there will be perceived, either with ordinary vision, or by the microscope, morbid changes, more or less extensive and complete, in the mucous membrane of the stomach.

The blood vomited affords some indications. If florid and liquid, it is probably arterial; if dark, venous of course. If clotted and dark, and if the patient had no perception of that gush of warm fluid which we formerly adverted to, the hæmorrhage has probably been gradual, and is of a passive kind. If the discharge consists of what is called grumous blood, or resembles coffee-grounds, capillary exudation is indicated, and the prognosis is bad; for from causes not yet well understood, hæmatemesis of this kind seldom occurs, except as a precursor of death. If the hæmorrhage is intermixed with bile and pus; more especially if, as has happened, a gall-stone has come up at the same time, then it is evident that the discharge is hepatic.

The treatment of hæmatemesis is in some degree modified by the causes of it. When the hæmorrhage is due to suppressed or inefficient catamenia, or to suppressed hæmorrhoids, and occurs in plethoric subjects, it may be proper, not only to use the local means presently to be enumerated, and to place the lower extremeties in hot water, but even to phlebotomize the arm or foot. In addition to the above means, we must, in the case of a woman with torpid uterus, foment the pudenda, and administer emmenagogues. With a man used to hæmorrhoids and hæmorrhoidal discharges, but in whom they are suppressed or scanty, a hot semicupium and stimulant suppositories, or injections, should be had recourse to. Internal styptics should simultaneously be administered, such as simple cold or iced water, or ice itself, (if procurable); or an alum whey, consisting of a pound of that fluid, in which two drachms of alum are dissolved, and of which a small teacupful may be taken. Rose water may be substituted for the whey or oxymel. A favorite astringent pill in France is one composed of three or four grains of alum, two or three of sang-dragon (calamus draco and conserve of roses, of which from one to six or eight may be taken in twelve or sixteen hours. Some recommend, also, the application of bladders containing ice or cold water, externally, to the epigastrium. Such means will usually speedily succeed in hæmatemesis of this indirect and simple kind. The recurrence of it must of course be prevented by anticipating its causes—namely, by re-establishing the catamenia and the hæmorrhoidal discharge, or else by reducing systemic plethora, obviating the necessity for either hæmorrhoids or hæmatemesis.—*Lancet, Jan.* 20, 1849, *p.* 64.

46.—ON FUNCTIONAL DISEASE OF THE LIVER, ASSOCIATED WITH UTERINE DERANGEMENT.—By Dr. Butler Lane.

[Dr. Lane thinks that the relations between the liver and the uterus, both in health and disease, have not been sufficiently noticed. He says:]

The research and experience of three years enabled me to advance the following propositions:—

1. In a state of health an anatomical and physiological relationship exists in the female between the liver and the uterus.

2. The relationship in question is apt to be disturbed in many forms of disorder and disease, primarily implicating either organ individually.

3. The disturbance in question, though varying much in nature and degree, assumes certain definite aspects, the recognition of which serves much to direct and facilitate our therapeutic appliances.

In a great majority of instances it will be found that menstruation rarely occurs without some concomitant alvine derangement. The bowels will vary from their usual state of action, becoming either confined or relaxed relatively to their ordinary condition. Now we know that bile may be considered as the natural stimulus to healthy alvine action; if, therefore, that secretion be increased or diminished, so in proportion will there consequently be increase or diminution in the action of the bowels. Assuming, therefore, the existence of an hepatico-uterine relation, it will follow that when the periodical excitement of the uterus takes place, occasioning menstruation, then the liver will manifest some sympathetic influence. If the action should be simply derivative, the biliary secretion will be diminished, and the natural catharsis will consequently be lessened. But if a greater degree of excitement attend the menstrual period, the liver may be even supposed to undergo a sympathetic degree of excitement or erethism, and its secretion being thereby augmented, instead of being diminished, increased catharsis will consequently result. It is also to be remembered that there is an immediate connection between the veins of the uterus and the portal system, which must exert some influence. The uterine blood, however, when subjected to its own special secretive action, is purified by that very process, and consequently it does not in that respect need the hepatic elaboration; it is unlike the intestinal blood, which is impoverished by furnishing pabulum for the secretions and deteriorated by the admixture of foreign matter imbibed by venous absorption.

In some instances, certainly, intestinal irritation will cause uterine excitement, and on the other hand, I can conceive that uterine excitement may implicate the intestinal canal; but I cannot understand how uterine excitement is, as a general rule, to diminish the normal irritability of the intestines, and the cathartic action thereon contingent, unless it be through the medium of hepatic influence. It seems at first sight rather irrational to consider the secretion from the portal venous system as antagonised by that from the arterial uterine system; but we must remember that, during the menstrual period, a complete temporary revolution takes place in the female constitution, which, indeed, is often very perceptible at its outset. In such cases langour and oppression are experienced, the pulse is accelerated, the countenance becomes sallow and almost jaundiced, a peculiar faint odour emanates with the breath and from the cutaneous surface, and only on the establishment of the uterine flux do these symptoms subside. I believe that at the approach of the uterine excitement the function of the liver is performed imperfectly, the process of depuration therein effected is incomplete, and the supplementary respiratory action, though often much excited, is inadequate to the task. Thus the arterial blood circulating through the system is to some extent impure; this very impurity is the essence of the peculiar constitutional state that exists, and it is by means of the uterine secretion that the blood undergoes the necessary process of filtration and separation, by which the system becomes relieved. Chlorosis has often been regarded as an hepatic affection, but it is only by adopting the above views that the assumption admits of explanation. *Med. Gaz., Dec. 29, 1848, p. 1094.*

47.—ON THE DEPURATIVE ACTION OF THE BILE.—By Dr. Faucompeau-Dupresse.

[Speaking of the function of the liver as auxiliary and vicarious to that of the lungs, the author observes:]

In intra-uterine life, the bile, in the absence of respiration, purifies the blood by the removal of carbon. The meconium of the fœtus is the carbon of the blood, extracted in a liquid form, which, after birth will be eliminated in the gaseous form. If it is objected that the biliary secretion in the fœtus is not manifested until towards the fourth month, it may be answered that, until this period, the liver is of a very considerable proportionate size, and that it retains, for the purpose of its augmentation, materials which, later, will serve for the secretion of this fluid. This function of the bile is not so applicable in extra-uterine life. In the different vertebrata, the development of the liver is generally found to be inversely to that of the lungs. This remarkable antagonism exists especially in fish, which respire by the branchiæ. In certain species of serpents, the bile is very abundant, as if to compensate for their imperfect respiration.

MM. Sandras and Bouchardat (Annuaire de Thèrapeut., 1845,) have established that, whatever be the nature of the aliment taken by an animal in good health, the quantity of fatty matters found in the blood, is nearly the same, which gives rise to the supposition that they are eliminated as fast as they are introduced into it. According to the same authors, the fatty bodies which the liver separates from the blood, have a constant point of fusion, and consist principally of cholesterine, which the blood of carnivora always contains, and of the margaric and oleic acids united with soda. The fatty bodies of the blood are subjected to a series of successive oxidations, by which the solubility of the sodaic compound, which they form, is indefinitely increased. Chole terine may result from the alteration of the fatty bodies; for it is a neutral fat, the point of fusion of which is very high, and which, not having been burned in the blood, must necessarily become eliminated from the economy.

Brit. and For. Med. Chir. Rev., Jan., 1849, p. 124.

48.—ON THE USE OF THE PANCREATIC JUICE.—By Dr. J. C. Hall, East Retford.

[Dr. Hall says that great light has been thrown upon the function of the pancreas by the experiments of Dr. Charles Bernard. He says:]

There does appear little or no doubt but that the proper office of the pancreatic fluid is the absorption of fatty matters, and the formation of chyle. He found, "at a temperature of 38° to 40° (100° to 102° F.), on mixing the pancreatic juice with oil, butter, or grease, that it was observed that the fatty particles became completely emulsed (*se trouve instantement emulsionnee*) the liquid being of a creamy consistence and white colour, resembling the chyle; nor are these fatty matters simply divided or emulsed (*emulsionnes*) they have evidently undergone some peculiar transformation, a property possessed by the pancreatic juice only." M. Bernard has tried the action of the bile, the saliva, the gastric juice, the serum of the blood, liquid from the arachnoid (*cephalo-rachidien*), on fatty matters, and not one of these liquids has had any effect on grease; and, if a morbid or altered juice be employed, it soon separates from the fatty substances, without exerting any marked influence upon them. These experiments, exhibited before M. Magendie and M. Andral, are no doubt altogether to be depended on.

The results of M. C. Bernard's experiments on healthy living animals may be briefly given thus:—If a dog be killed during a full digestion, oil will be found unchanged in its nature until it comes into contact with the pancreatic fluid. He has also proved the very important fact, that if the pancreatic ducts be tied, no change takes place. In a rabbit, the pancreatic canal

(*canal pancreatique*) is of a peculiar formation, opening low down in the intestinal tube (35 centimetres [13·77 inches] under the choledochus). This is the discovery (perhaps I ought not exactly to term it a discovery) of M. Bernard, for experiments to shew that the chyle was rendered limpid by ligature of the choledochus, were made many years ago by Sir B. C. Brodie. The fact has since been ascertained, however, that in the cat the pancreatic duct anastomoses with the choledochus before opening into the intestine, and it is possible that this distinguished physiologist, then unaware of the circumstance, included both vessels in the ligature. With regard to the cat, it is also exceedingly interesting, and goes to remove the error so long entertained by physiologists, that the bile is the fluid by which fatty matters are acted upon—a property clearly proved by M. Bernard to belong *most exclusively* to the pancreatic juice, which must, therefore, now be regarded as the true agent by which fatty bodies are digested.

When fat is introduced into the stomach of the rabbit, the contact of the gastric juice produces no alteration, nor is it in any degree changed in its passage along the intestinal canal, until it arrives at that portion where it is brought into immediate contact with the gastric juice: and it is exactly at the mouth of the pancreatic canal (*l'abouchment du canal du pancreas*) that the lacteals convey chyle of a white colour; *higher up they contain only chyle of a transparent hue* (*chyle encore transparent.*)

No one can read these details, and not arrive at the same conclusion as Dr. Charles Bernard, that the pancreatic juice, hitherto considered as the abdominal saliva, the use of which was to soften the food, is in reality charged with the important office in the exhibition of the cod-liver oil, already alluded to. We know, also that the best time to give it to the patient, is one or two hours after breakfast, after dinner, and after tea. If given at these times it does not occasion those disagreeable eructations which are apt to occur when it is taken either with, or immediately before food; by taking it at this time we can now see how these eructations are avoided by the newly discovered and peculiar action of the pancreatic juice. In practice, I have found it very important to be thus particular in fixing the time at which the cod-liver oil should be taken, more particularly in the diseases of children; and so far as my present experience enables me to speak, in no disease is cod-liver oil more valuable than in scrofula mesenterica.

Medical Gazette, April 13, 1849, *p.* 648.

URINARY ORGANS.

49.—ON HÆMATURIA.—By Dr. R. B. Todd, F. R. S., Physician to King's College Hospital, &c.

[The following observations are from an interesting clinical lecture by Dr. Todd, on some cases of hæmaturia. The most important point of diagnosis, Dr. T. observes, is to determine whether the blood is derived from the kidneys or the bladder. The circumstances which shew the blood to be derived from the kidneys are its uniform diffusion in the urine, (except when it has coagulated in the ureters), the presence of renal epithelium, as observed by the microscope, and pain, and other special symptoms of renal affection. In the first case related by Dr. Todd, the hemorrhage, which was renal, was excited in an unusual manner. The patient was a man with acute rheumatism and pericarditis; when he was admitted, the urine contained lithates in large quantity, and *blood*, and the bleeding continued for many days, until a large quantity of blood had been lost,—indeed it was going on at the time the lecture was delivered. Dr. Todd observes:]

Now what can be the cause of the hemorrhage in this instance? You may remember that I told you in my last clinical lecture, that it was common to find, in the course of certain diseases dependent on the presence of

morbid matters in the blood, more or less irritation of the glands through which the morbid matter is eliminated. The glands especially concerned in the elimination of the poison of rheumatic fever, are the kidneys, and, in the present case, the irritation has been extreme. As a result of it, a great afflux of blood to these organs takes place; and if this engorgement attains a certain intensity, the delicate vessels of the Malpighian bodies give way, and the blood escapes. Now we have many cases to prove that hæmaturia may be caused by the irritation of the kidneys, excited by a substance which can reach the gland only through the blood. It is well known that turpentine and cantharides will both irritate the kidneys when administered in large doses. Cantharides in small doses excites the kidneys, and increases the secretion of the urine, but the excessive excitement produced by large doses diminishes the flow of urine, the state of engorgement being too great to be compatible with the healthy functions of the organ; finally the vessels yield, and hemorrhage is the result. The effect of turpentine is the same. And when you examine the kidneys of patients who have died after taking turpentine, as I had the opportunity of doing not long ago by the kindness of Dr. Johnson, you find many of the uriniferous tubes, and of the Malpighian capsules, full of blood; thus clearly denoting the precise source of the hemorrhage. In the present case, lithic acid was the principal irritating agent, as was shewn by the great abundance of lithates with which the urine was loaded. Sometimes oxalate of lime is formed and is discharged with the lithates, as in the present case. Now oxalate of lime is a very irritating substance; and thus in the present case there were probably two sources of irritation—the lithic acid and the oxalate of lime.

Treatment.—The principal indication in a case of this sort is to promote active elimination by other emunctories besides the kidneys, and so to relieve these organs as much as possible. Thus it will be necessary to excite the action of the skin by diaphoretics; of the bowels by purgatives. Counter-irritation over the region of the kidneys may be also advantageously employed, or, if the patient is robust, a small cupping may be of use; but the strength of the patient, and the amount of the hemorrhage should always be carefully taken into account prior to the application of this remedy. In this case, we should not be justified in taking away blood, the patient being already greatly anæmiated. Sometimes, however, the rapid and sudden abstraction of a small quantity of blood will put a stop to the hemorrhage at once. And this acts, perhaps, on the principle of revulsion, or of counter-irritation. If you have recourse to counter-irritants, you must be careful to employ mustard, and to avoid turpentine and cantharides, the active principles of which, even when they are applied to the skin, are readily absorbed, and may exercise a pernicious influence on the urinary organs.

[Dr. Todd remarks *en passant*, that the loss of blood did not prevent the accession of severe pericarditis, which in fact, as well as the articular symptoms, was much less tractable than usual. In the second case, one of inflammatory renal dropsy, the urine was at first very scanty, and contained albumen, blood corpuscles, fibrinous casts, and renal epithelia.]

The state of the kidneys in this case was probably owing to exposure to cold, but the attack cannot be traced to any particular instance of exposure. Cold, however, is the most common cause of this state of kidney, particularly if accompanied with a sudden suppression of sweat. Under these circumstances, some morbid material is retained in undue quantity in the blood, which irritates those organs through which it is eliminated, in a manner similar to that in which the morbid matter or poison of rheumatic fever is eliminated. In this way an irritated and inflamed state of the kidney is induced, which sometimes terminates in destructive disease of the organ.

The indications for treatment afforded by a case of this kind are very obvious; they are to restore the defective action of the skin—to soothe and

relieve the irritation of the kidney—and to promote the elimination of water from the system. We have in the hot air bath a very valuable and ready means of exciting the action of the skin: this was consequently used with our patient from the beginning, and with the effect of promoting sweating while he was in the bath, as well as afterwards. After the hot air bath has been frequently used, it produces a state of great debility; and this constitutes the chief difficulty in continuing it, in order to gain the greatest benefit from it. In this instance I carried into effect the Russian practice of dashing the patient with cold water immediately he came out of the bath. The effect in this, as in other cases in which I have tried the plan, was certainly to give the patient a greater tolerance of the remedy, and, at the same time, by the reaction which succeeded the cold dash, to cause more active sweating on his return to bed.

With the hope of relieving the active congestion of the kidneys, our patient was cupped over the loins, and several ounces of blood were taken away. I cannot say that he derived any benefit from this; and, I must confess that in the treatment of similar cases I have been more frequently disappointed than satisfied by topical bloodletting when the congestion of the kidney was active. I suspect that as long as the morbid matter is undergoing elimination through the kidney, and keeping up irritation of the gland, local bloodletting does little or no good. If a particle of dust gets into the eye, it excites conjunctival inflammation,—you may leech the eye, day after day, until your patient is blanched,—yet active congestion of the conjunctiva will continue; but remove the particle of dust, and the congestion will quickly subside. So with the kidney,—you will do more to relieve the active congestion of which it is the seat, by opening new channels for the elimination of morbid matter—restoring and promoting the action of the skin, and increasing that of the bowels—than by the withdrawal of blood. But when these evacuations have been sometime in action, and the congestion of the kidney has assumed a passive character, then the removal of blood by cupping, or by leeching, will often succeed in relieving the congestion.

The third indication, that of promoting the elimination of water from the system, is in some degree fulfilled by the sweating process; but the use of drastic and hydragogue purgatives supplies us with a very efficient means of getting away a considerable quantity of fluid through the intestinal canal. For the generality of cases you will find that which we employed in this case the most efficient remedy of this class—namely, the compound powder of jalap; it is a safe and sufficiently active medicine. In other instances, elaterium may be resorted to, but this is a much more violent remedy, and likewise very uncertain, owing to the difficulty of procuring it in a state of purity.

After the inflammatory condition of the kidney had been subdued by the means above detailed, and that the organ began to resume its secreting activity, as shown by an increase in the quantity of the urine, I administered the bitartrate of potass in diuretic doses. Now this would be apparently an unscientific plan of treatment if this medicine be supposed to exercise any direct stimulating influence upon the kidneys. It is probable, however, that its diuretic powers may be due to some chemical or physical change which it produces in the blood, whereby the exosmose of its water through the Malpighian vessels is favoured. On this view no objection can exist to the employment of this remedy in inflammatory states of the kidney; and, indeed, experience tells so much in its favour, that we should not be justified in abstaining from employing it, merely on account of an hypothesis, which may or may not be well-founded.

[As the acute stage passed away, and the urine began to flow more freely, the quantity of blood diminished; but in rather more than three weeks after his admission into the hospital, the hemorrhage became more violent than ever. The treatment was now changed, and stimulants, nutritious

diet, counter-irritation, and four-grain doses of gallic acid, were given with good effect. The third case related by Dr. Todd was one of dropsy following scarlatina; and in the fourth the hemorrhage seemed to have been at the first vicarious of the catemenia, which had not appeared, the patient being a girl of sixteen. Dr. Todd remarks:]

From the long duration of the hemorrhage in this case (two months), and the state of extreme debility to which the girl was reduced, I was anxious to improve the state of her blood as much as possible, and to check the hemorrhage. She was well supported, had a moderate allowance of port-wine daily, and took astringents, lead, gallic acid, tannin, the tincture of the sesquichloride of iron. The hemorrhage, however, showed no disposition to stop; it diminished for a little while, but returned again with as much intensity as before. She is now again taking gallic acid in large and frequently repeated doses. If the hemorrhage does not soon cease, I intend to try some of the terebinthinate medicines, which are supposed to exercise a styptic influence. There is no doubt that they do act favourably as styptics in intestinal hemorrhage, but in renal hemorrhage their power is much less certain, and, moreover, they are very apt to excite irritation.*

Of the four cases which I have now given you, you will see that in two—the first and third—the hemorrhage was due to irritation; in one, the second, it was first caused by irritation, and afterwards continued by the patient getting into a peculiar constitutional hemorrhagic state, called by some *passive hemorrhage*; the last case may be looked upon as purely *passive*, at least during the greatest part of the duration of her malady. Now by the use of the term *passive* I must not be thought to admit a distinction which some pathologists draw, and to grant that hemorrhage may take place by the filtration of the blood through the coats of the capillaries without their rupture—such an hypothesis appears to me to be quite untenable; it is anatomically impossible for the blood corpuscles to pass through the coats of the capillaries unless they had pores which would be visible by the microscope. But this is the distinction I would make; in *active* hemorrhage the rupture of the vessels arises from the presence of an inordinate quantity of blood in them; in *passive* hemorrhage the same rupture arises, not so much from the quantity of the blood as from its depraved quality, and the ill nourished and weakened condition of the coats of the vessels themselves, which give way on the slightest pressure.

Thus we see there are two distinct ways in which renal hæmaturia may occur; and it is very important that the practitioner should clearly determine the real cause of the hemorrhage, as it is this diagnosis which must guide him in deciding what plan of treatment he will adopt.

I may here notice some other ways in which hæmaturia may be brought on:—Renal calculus is a very frequent cause of hemorrhage: but in this case the hemorrhage is dependent not on the *presence*, but on the *disturbance* and *movement* of the calculis; the calculus may exist for a long time, and yet no hemorrhage occur; but if the calculus be loosened by exercise or any other cause, blood is passed immediately: this may often be noticed in gouty patients. Again, a state of general cachexia, such as occurs in scurvy, may bring on hæmaturia, or such as results from an aguish state, brought on by the malaria of marshy districts: nothing is more prejudicial to hæmatosis, or the healthy elaboration of the blood, than the influence of the paludal poison. Sometimes a great development of the oxalic diathesis will give rise to renal hemorrhage; and Dr. Prout mentions that he met several instances of this after our first visitation of cholera, when the oxalic diathesis prevailed extensively.

* The necessity for great caution in the use of these remedies is shown by the sequela of this girl's case, which terminated, some time after this lecture was given, in her death. The hemorrhage resisting all the ordinary remedies, five drops of spirits of turpentine were given three times a day. In the course of two days this remedy was followed by strangury, and a great diminution in the quantity of the urine. This was followed by a low febrile state, with oppressed brain, in which the patient died. The kidneys were in a state of chronic nephritis.

The nature of the treatment should be determined in a great measure by that of the cause. If it is irritation, that irritation should be subdued; the irritating agent should be diverted into other channels by the stimulation of the other emunctories, and counter-irritants should be used; but care should be taken not to use such as might in their constitutional effects irritate the kidneys. If a general tendency to hæmorrhage is the cause, anti-hæmorrhagics should be administered—lead, tannin, gallic acid, are those from which you will find the greatest benefit; but tannic or gallic acid is, I think, by far the best. The worst case I ever met with, which was not unlike the second case I have mentioned to you, I treated with tannin, and the man got perfectly well, with a sound kidney. In addition to the tannin, you may with great advantage give a little port wine. Gallic acid is very similar to tannin, both in its effects and in the freedom with which it may be administered. It may be given suspended in a little mucilage, or made into a pill with confection or extract; it may be given in very large doses. I give as much as five grains, two or three times a day, and even much more, frequently. The only disadvantage arising from it, is that it constipates the bowels, but this is a very minor consideration: in fact, in some cases, it is not altogether a disadvantage, for the less drain the patient has from him the better. Now we have more experience of gallic acid than we were aware; *Ruspini's styptic*, which has been so extensively and so advantageously used, has been ascertained by Dr. A. T. Thompson to be chiefly a solution of gallic acid in alcohol. In all cases of hæmorrhage, whether hæmoptysis, hæmatemesis, hæmaturia, or any other form dependent on hæmorrhagic tendency, I have used gallic acid with the greatest advantage, and I am, therefore, inclined to look upon it as the best styptic which we possess.

When the hæmorrhage results from a mechanical cause, such as the destruction of a renal calculus, the best single remedy is rest, to which may be added, free dilution, and a general treatment applicable to the peculiar diathesis of the patient. *Med. Gaz., Jan. 19, 1849, p. 96.*

50.—ON THE EXCRETION OF URIC ACID.—By Dr. A. B. Garrod, Physician to University College Hospital.

[After calling our attention to a fact which he has recently ascertained, —viz., that there is no necessary relation between the formation of uric acid in the system and its excretion in the urine; and that the blood may be found loaded with this principle, and yet the urine be entirely devoid of it, Dr. Garrod proceeds to speak of]

Uric Acid Diminished.—A diminished amount of this acid in the urine may arise either from a decrease in its formation in the system, or from a defective "uric acid excreting function" of the kidneys; the former occurs in certain affections connected with a low state of the system, as in anæmia, after low fevers, or from any other circumstance producing such a state of health. The same happens in some cases of diabetes, and is usually regarded as a very unfavourable sign in the disease, for it may probably then arise from a general want of power in the animal frame; perhaps, however, this deficieney may sometimes be due to deficient excretion; this point has not as yet been experimentally proved, the examination of the blood for the estimation of uric acid not having been made. A diminution of uric acid in the urine from defective excretion is well exemplified in certain cases of gout; and such a condition of kidneys remains very permanent in those cases where the formation of tephaceous deposits, or chalk stones (composed, chiefly, of urate of soda), are formed. Often the uric acid alone is retained, the urea being excreted as usual. In certain stages, also, of granular degeneration of the kidneys, especially the advanced, the uric acid

becomes diminished in the urine; but in these the urea also suffers the same diminution.

Uric Acid in Excess.—In inflammatory affections and fevers it appears to be increased, especially when certain organs, such as the spleen and liver, are affected; this increase is both relative and absolute—much more of the principle being thrown out than in health, although the amount of urine is often considerably diminished. The same increase is observed in tubercular affections of the lungs; but in these, especially in the latter stages, the relative increase is greater than the absolute, a fact easily accounted for from the small amount of change which takes place in the system when the powers of life are reduced to so low an ebb.

If we examine the influence of food on the formation of uric acid, we shall still be unable to see any clear relation existing between the quality of the diet and the quantity of the acid formed; for in serpents living on flesh, and in carnivorous mammalia, the quantity thrown out differs extremely, and the same occurs in chelonia feeding on green vegetables, and herbivorous mammalia. The influence of different kinds of diet in the human subject I have already spoken of when detailing the results of Lehmann's experiments performed on himself, which appear to show that in health, when digestion is perfect, a highly azotized diet does not cause an increase in the uric acid.

The performance of the function of the skin seems in some way to influence the formation of uric acid, and it is in the urine of those animals in whom this is defective, that we observe the acid reach to the greatest extent. In the human subject, also, a close connection is observed between the arrest of the perspiration and the appearance of a deposit of urate of ammonia in the urine—*ex. gr.*, in common catarrh.

The most fruitful cause, however, of its abnormal production in the human subject appears to be indigestion; in that term I include both dyspepsia, and, also, the introduction into the system of excess of nitrogenised matters above what are capable of assimilation.

Lancet, Nov. 25, 1848, *p.* 371.

51.—ON THE SOURCE OF THE SUGAR IN DIABETIC URINE.—By Dr. A. B. Garrod.

In health, when sugar is taken into the stomach, it is not to be found in the urine, unless the amount introduced in a given time becomes excessive: it hence appears that there naturally exists in the system a power of destroying this substance, and breaking it up into other compounds, probably carbonic acid and water, which become eliminated by the lungs and skin. Very different views have at times been held as to the pathology of diabetes, some ascribing the disease to an affection of the kidneys, others, to a derangement of the stomach, where they consider that the sugar is formed. Against the first view many objections may be stated, for, in the first place, the kidneys in this disease, after death, have frequently been found quite healthy, and at other times only in an enlarged and congested condition, doubtless a secondary effect, arising from the large amount of work which they have been obliged to perform, in order to rid the system of the saccharine matters. With regard to the second view—viz., that the disease has its origin in the stomach, many and much more powerful arguments can be adduced in its favour, such as the detection of sugar in the matters vomited, and in the fæces; the symptoms referred to the alimentary canal, thirst, dry tongue, &c.; but these can be explained, also, in a different way, for if sugar existed in excess in the blood, we should naturally expect to find it in the secretions of the alimentary canal, as well as in the other secretions and excretions; and again, there is much reason to suppose that during the healthy digestion of amylaceous principles, as starch, &c., a conversion into

sugar takes place before they become absorbed by the alimentary canal. We know, also, that we may take sugar as an article of food without the occurrence of a saccharine condition of the urine: hence it appears that it cannot be simply a perverted state of stomach causing the conversion of amylaceous bodies in sugar, which give rise to the disease, and we must look still deeper into the changes which afterwards occur, before we can hope to understand the pathology of this obscure affection. What becomes of the amylaceous principles after they are absorbed into the blood? They can scarcely be detected in that fluid, even although large quantities have been taken; hence they must in some way become altered in properties, for we cannot suppose that they are destroyed as quickly as they are absorbed: perhaps they are converted into lactic acid, and unite with bases, as soda, &c., in the blood; but as hitherto we have no positive proof, although there is great probability of the existence of this acid in that fluid, we cannot at present decide on the point; they may, in their altered form, constitute a portion of the undetermined extractive matters of the blood. As we find the elements contained in these principles eliminated from the body, in the form of carbonic acid and water, from the lungs and skin, there is every reason to suppose, that when the functions of the economy are properly performed the principles are thus thrown out, having during their metamorphoses been subservient to the performance of certain important offices, as the production of animal heat, &c.; and that in diseased conditions of the system, termed saccharine diabetes, this change is not effected; and the sugar which is then formed, remaining as a foreign body in the blood, becomes eliminated by the kidneys in an unchanged condition. According to this view, the disease would be referred to a defect in what may be termed the secondary assimilating functions; but of the real nature of this defect we are at present ignorant. Some have ascribed it to a deficiency of alkaline salts in the blood; but I am not aware that the blood in this disease is less alkaline in its reaction than in health; and certainly alkaline salts have repeatedly been given to diabetic patients without diminishing the quantity of sugar in the urine. Some very interesting experiments were performed, a short time since, by Professor Graham, on diabetic patients in University College Hospital. The experiments were continued daily, for several months, in two of the cases; and in several other cases for a few days at a time. The result of these researches are published in Dr. Walshe's article on "*Morbid Products*" in the Cyclopædia of Anatomy and Physiology, and are as follows:—

"The quantity of saccharine matter found in the urine never exceeded the sugar and starch in the food. On the other hand, the sugar and starch in the food were accounted for in the urine to within one-fourth or one-fifth of the whole quantity. As there was also sugar, besides, in the fæces, in a sensible, although not considerable quantity, it appeared to follow, that sugar, and substances convertible in the stomach into sugar, are, in diabetic patients, nearly, if not entirely, indigestible; that is, they pass through the blood without being burned, and thrown off in the form of carbonic acid and water, as they are in a healthy state. The idea of any portion of the saccharine matter found in the urine being formed from the protein, or azotised portion of the food, was entirely excluded.

"The proportion of sugar in the urine has a limit which it cannot exceed, but which varies within a small range in different patients, about four and a half per cent., being the usual maximum. The volume of the urine comes, therefore, to be entirely governed by the quantity of saccharine matter in the food.

"Although sugar escapes oxidation in the respiratory process of diabetic patients, alcohol is entirely consumed. On one occasion a diabetic patient swallowed twelve ounces of absolute alcohol, contained in a quart of whisky, within twenty-four hours, without a trace of it appearing in his urine or other excretions. Gum arabic, also, taken as food to the extent of five

or six ounces a day, did not cause an increase of sugar in the urine, and was probably, therefore, digested. Both alcohol and gum are, like sugar, pure aliments of respiration.

"It is well known, that in the air expired by man the proportion between the volume of carbonic acid found and oxygen deficient is remarkably uniform, and indicates that an excess of oxygen, nearly constant in amount, is consumed above what is represented by the carbonic acid, due, of course, chiefly to the oxidation of the hydrogen. An amylaceous diet, in which the only combustible element is carbon, tends to reduce this disproportion, while an animal diet increases it. I therefore expected to find a deficient proportion of carbonic acid in the expired air of a diabetic patient confined to an animal diet; but such was not the case; the proportion proved to be perfectly normal. This implies a considerable waste of azotized food, that even the protein compounds are only partially digested in the system of a diabetic patient. The assimilating power appears, indeed, to be generally deficient." *Lancet, Dec. 2, 1848, p. 597.*

52.—ON OXALURIA.—By Dr. A. Garrod.

Healthy urine does not appear to contain oxalic acid; if it did so, the lime which naturally exists in this fluid would cause it to be precipitated in the form of the insoluble oxalate of lime, and hence it could readily be detected by the microscope. At first, our knowledge of the state of system connected with the formation of this acid was derived from the cases in which calculi of oxalate of lime were formed, and to Dr. Prout we are chiefly indebted for such information. More recently, however, since the application of the improved or achromatic microscope in the investigation of urinary deposits, this body has been found to be of much more frequent occurrence than was formerly supposed, and at the present day to such an extent has it been found to exist, that unless it occurs in very large quantities, and for some time, it is questionable whether we should lay much stress upon it as a pathological sign.

Microscopic and Chemical Characters of Oxalate of Lime Deposits.—If urine containing oxalate of lime is shaken, and a few drops submitted to examination under the microscope having a magnifying power of about two hundred diameters, beautiful crystals of the oxalate are seen, presenting the appearance of flattened octahedral crystals, which assume different forms according to the manner in which they lie on the glass. Sometimes along with these, a different form of the same oxalate is seen—viz., vitreous-looking masses, striated, which assume the form of dumb-bells, ovals, or spheres, first described by Dr. Bird; these latter forms, however, are comparatively rare, and I have only met with them in cases where the patients have for a long time passed immense quantities of the oxalate. Dr. Bird has given the following measurement of oxalate of lime crystals:

Length of the side of the octahedra, from	$\frac{1}{750}$	inch to	$\frac{1}{1000}$
Long diameter of dumb-bell crystals ...	$\frac{1}{333}$	"	$\frac{1}{1000}$
Short diameter of ditto	$\frac{1}{750}$	"	$\frac{1}{1000}$

I may remark, that I have occasionally met with the octohedra much larger than 1-750 of an inch, and very frequently of a size considerably smaller, some certainly not measuring 1-50000 of an inch, and requiring a very perfect object glass, one-twelfth of an inch focus, for their perfect definition.

If the oxalate exists in small quantities only we should allow the urine to stand for some time in a tall vessel, and decant the clear fluid from the deposit which slowly takes place. A drop or two of this will then exhibit the crystals in much greater abundance than the urine itself; and if we

wish to collect the crystals, we should add distilled water to the deposit, and after a few minutes, the crystals having subsided, remove the fluid by means of a pipette.

When dry, the crystals have the appearance of a glistening powder, and possess the following characters:—They are insoluble in water, acetic acid, or alkaline solutions, unless boiled for some time with these latter: soluble in hydrochloric and nitric acid. When heated to dull redness on a piece of platinum foil, a carbonate of lime is formed, which dissolves with effervescence in acetic acid, and if heated to a bright red or white heat, pure lime remains, which gives the alkaline reaction to test paper.

It is very common to find urate of ammonia mixed with the oxalate of lime in the deposit, which can be removed by warming the deposit to which the distilled water has been added previous to removing the fluid with the pipette.

Oxalate of lime occurs in urine having very different characters in other respects. Very frequently in dense urine having an excess of urea, and a deposit of urates, the urine is acid in reaction, at times giving rise, according to Dr. Bird, to a further deposit of the oxalate on the addition of lime salts, which would indicate, that in such cases all the lime in the urine has been thrown down by the oxalic acid, and still some soluble oxalate, as of ammonia or soda, remained in solution. Sometimes, though rarely, oxalate of lime occurs in saccharine urine. A case illustrative of this is now under my care; but here, in addition to the oxalate, urate of ammonia is also present. In one case I noticed it in connexion with a deposit of cystine, but here also there was no deficiency of uric acid in the urine.

Pathology of Oxalate of Lime.—Dr. Prout considers the presence of oxalic acid in the urine to be, like diabetes, due to some mal-assimilation of the amylaceous principles of the food. This conclusion is one very naturally arrived at, when we consider the close connexion which exists between sugar and oxalic acid, and how readily the latter body may be produced from the former by the action of a strong oxydizing agent, as nitric acid, and also from the symptoms which appear in the aggravated form of this diathesis, more or less resembling some of those which occur in diabetes; it must be remembered also, that it was only in the aggravated form that, a few years since, this diathesis could be detected; but these are circumstances which favor the idea, and render it more probable that the production of this acid is, at least in most cases, more connected with the uric acid than with the saccharine diathesis; for we find, in examining calculi, that alternations of urate of ammonia are of constant occurrence.

Again, we find that deposits in the urine of oxalate of lime and urate of ammonia very frequently coexist, and that the urine of a patient which one day exhibits abundance of crystals of the oxalate, will on another day have them almost entirely replaced by urate of ammonia. And, again, in patients voiding urates on recovering from acute diseases, as rheumatism, &c., the urine will, on some slight change of the weather, and from other trivial circumstances, show the presence of crystals of oxalate of lime. We know, also, how readily oxalic acid can be produced from uric acid by the action of even weak oxidizing agents, as peroxide of lead; and that urate of ammonia will, in presence of lime, spontaneously undergo this change, as is seen in old specimens of guano; the uric acid formerly existing in them being often greatly replaced by oxalic acid. It is also asserted that the amorphous deposits of urate of ammonia, by being kept for some time in urine, will, in like manner, undergo this change. I think I have found in some specimens containing a mixed deposit of urates and oxalates, that the latter have become greatly increased by being allowed to remain. Liebig attributes the formation of oxalates from the urates, by supposing the uric acid has undergone further oxidation. It appears, however, that when the diathesis is thoroughly established, it depends on some mal-assimilation, and to have a close connexion with the digestive function. And perhaps,

in considering the diseased states in which oxalates are found in the urine, it would be proper to separate them into at least two classes; one, in which the oxalates are only occasionally formed, and in connexion with the uric acid diathesis; the other, where oxalic acid is a constant constituent in the urine, and in a great measure replaces this latter body, and in which the relative amount of urea is greater than in health.

In the former division, we know of no symptoms which accompany the formation of this acid; but in the latter, many and serious symptoms are generally present; usually they are of a nervous character; great depression of spirits, even hypochondriasis; incapability of exertion, or extreme depression, after slight exertion; dull, heavy pain in the loins; dyspeptic symptoms, indicating a diminution in the powers of the digestive organs; occasionally an irritability of the bladder, (I have sometimes found the disease in connexion with involuntary nocturnal micturition). Dr. Plant considers that cachexia, produced by a syphilitic taint, hereditary or acquired, gives a predisposition to this diathesis; and that among the exciting causes, one of the most powerful is the residence in a damp and malarious district; he also notices the prevalence of the diathesis during the epidemic of cholera in 1832. Among the symptoms of the diathesis, he mentions the liability to cutaneous affections, especially of an impetiginous character.

As the well-marked cases in which this diathesis prevails are almost constantly associated with an excess of urea in the urine, it is difficult to know what symptoms are connected with the abnormal increase of this latter principle, and what to the formation of this unnatural product. So far as my experience enables me to form an opinion on the subject, it amounts to this: that when, in a patient in whom a considerable tendency to the formation of an increased quantity of uric acid exists, a condition of system leading to an increased excretion of urea, is induced, then oxalic acid is very apt to be an accompaniment, and the uric to be nearly, if not entirely, replaced by this acid; for the truth of this opinion, however, I would not vouch. When this disease lasts for a considerable time, a calculus is liable to form, but this is exceedingly rare compared with the number of cases in which the oxalate of lime is found in the urine, probably about the same ratio exists in this as in the other diathesis. *Lancet, Dec. 2, 1848, p. 597.*

53.—ON BLOODY AND ALBUMINOUS URINE.—By Dr. A. B. Garrod.

[When blood is not coagulated, but diffused through the urine, it communicates to it a color resembling that of port-wine, and deposits a sediment, ascertained by microscopic examination to be composed of the blood-globules.]

The color of the urine must not be alone depended on, as indicating the presence of blood, for a color not unlike that produced by the solution of the hæmatosine of the globules may be owing to the presence of bile pigment, coloring matter of the urine in excess, (purpurine), or from certain principles taken into the stomach, as logwood, &c. These, however, may be readily distinguished, for if the color depends on blood, heat causes it to become altered, and it is thrown down when the albumen is coagulated. Again, bile pigment gives the peculiar play of colors when treated with nitric acid, and that from vegetable coloring matters is not altered by a boiling temperature. The only difficulty in these cases is to distinguish whether the albumen of the urine is entirely due to the effused blood, or not, as hæmaturia not unfrequently occurs during the course of affections of the kidneys, giving rise to albuminous urine. If such, we can, however, generally determine the point by comparing the coagulum of albumen, which the clear portion gives when heated, with the amount of blood discs deposited; or if we can wait and re-examine the urine, when blood is not present in the fluid, and see if it then contains albumen.

Albuminous Urine.—In perfectly healthy urine, not a trace of albumen can be detected by the most delicate tests, but in many morbid conditions we not unfrequently meet with this substance, and as a knowledge of its presence is of the greatest importance, I will endeavour to make you acquainted with the best methods of proceeding for obtaining such information.

Albumen possesses the property of coagulation by heat about 160° Fahr., and therefore when urine containing this principle is heated, a coagulation will occur, and the fluid become opaque: this will generally happen, as the urine has usually an acid reaction, but should it be alkaline from any cause, then exposure to heat alone is not sufficient, the alkaline state of the fluid holding the albumen in solution; we can, however, guard against this by insuring an acid state of the fluid, by the addition of a few drops of some acid, as the nitric; and if urine, thus made slightly acid, gives a precipitate when heated, we may conclude that albumen is present.

Coagulation by heat alone is not a certain sign of its presence, as in some non-albuminous urines a precipitate of phosphates may occur, even when the urine is slightly acid; these, however, are re-dissolved, by the addition of a few drops of acid. Nitric acid alone is not sufficient, as when a large quantity of urates are in solution a precipitation of uric may occur; which, however, is re-dissolved, when the fluid is heated with the acid: and again, after the administration of cubebs and copaiba, certain matters of an oily nature are sometimes found in the urine, which, on the addition of cold nitric acid, cause an opacity. Many other modes of detecting albumen have been proposed, but none are so easy of application, and so certain in their results, as the method I have just mentioned; for example, the albumen may be thrown down by ferrocyanide of potassium, after the urine has been previously made acid with acetic acid, or a solution of the bichloride of mercury may be employed for the purpose, which causes its coagulation; these latter tests, however, will cause the precipitation of other protein compounds besides albumen, and therefore are less valuable. When it is desired to estimate the quantity of albumen contained in the urine, we may proceed as follows: take a weighed portion of the fluid, and heat it in a platinum crucible, having first acidulated with a few drops of nitric acid, keep constantly stirring with a glass rod, till the boiling point is attained, then pour the whole on a weighted filter, and afterwards thoroughly wash, dry, and re-weigh; the excess of weight above that of the filter gives the amount of albumen contained in the urine.

Pathology of Albuminous Urine.—When albumen exists in the urine, independent of the presence of blood or pus, it seems to be owing to some morbid condition of the kidneys themselves. Probably the immediate cause is congestion, or an obstructed flow of blood through the renal capillaries. Thus it can be artifically produced by obstruction to the veins, as shown by Dr. Robinson, and it also at times occurs during pregnancy, as noticed by Dr. Lever, (here the same explanation probably holds good); also from certain abdominal tumours causing a like pressure. This I had an opportunity lately of observing in a patient suffering from ovarian disease, and in whom the kidneys were found to be perfectly healthy. Albuminous urine also not unfrequently occurs during the congestive stages of febrile disease, and disappears on the recovery from such. This is especially the case after scarlatina, and sometimes, it is stated, after measles also, and other skin affections; likewise in certain cases where the kidneys appear to become intensely congested from exposure to cold. But by far the most common cause of this state of the urine is that disease of the kidneys first made known by the researches of Dr. Bright, and to which the name of Bright's disease, or granular kidney, has been given.

‖ *Lancet, Dec., 2, 1848, p. 599.*

54.—ON ALBUMINURIA.—By Dr. J. D. Heaton, Leeds.

[Speaking of the employment of hydragogue purgatives in the treatment of this disease, Dr. Heaton observes :]

I find none more convenient than croton oil, which produces copious evacuations, and with less sickness and discomfort than are caused by elaterium. Some of the neutral salines, as sulphate of potash, are likewise useful for this purpose ; these should be given in rather a concentrated solution, which then determines an endosmosis of the watery part of the blood into the intestine from the blood-vessels, which, thus deprived of their natural tension, become actively absorbent of the dropsical effusion which they had before allowed to escape. But if the saline be given much diluted, or, what is in effect the same, if followed by much diluent drink, it then enters the blood, and acts upon the kidneys. Cream of tartar is likewise useful as an hydragogue purgative of mild operation, when given in full doses, and what enters the blood acts favorably upon the kidneys.

[When there are no febrile symptoms, and it is required to give tonics to improve the general health, Dr. Heaton says :]

In this disease, no medicines are equal to the preparations of iron, and of these I know none so suitable as the tincture of the muriate, which combines diuretic with its chalybeate properties. In many cases I have found most marked benefit from the use of this remedy, both to the general health of the patients, and in producing a more healthy condition of the urine which is the best proof of actual improvement. The effect of this disease upon the blood is very marked and characteristic; beside the accumulation in the blood of urea, which should be excreted by the kidneys, and the diminished proportion of albumen in the serum, there is a very great reduction in the amount of red globules which it contains. This is evident in the pale leucophlegmatic appearance of those who have been long the subject of albuminuria; and we know that no medicine has an effect equal to chalybeate preparations, in restoring the red globules to blood in which they are deficient. *Prov. Med. and Sur. Jour., April 4, 1849, p. 169.*

55.—THEORY OF DIABETES.—By M. Mialhe.

The author assigns as the cause of saccharine urine, and the disorders consequent upon its secretion, a want of sufficient alkalinity in the fluids of the body. To him the cause of diabetes is not a peculiar agent which gives diabetic patients the faculty of transforming certain alimentary substances into sugar, which latter entering the torrent of the circulation is eliminated by the urine; but he maintains, first, that the transformation of amyloid substances into sugar is not peculiar to diabetic patients; that it is not an accidental phenomenon, but that it is, on the contrary, a necessary part of the digestion and assimulation of food.

Secondly, that this transformation is brought about by the agency of a special ferment, which the author has discovered in the salivary glands of all animals, and which exercises a specific action on feculent substances similar to the action of diastase (the active principle of malt) on starch, whence he calls this ferment *animal diastase*. Thirdly, amyloid substances must in all animals, without exception, be converted into sugar under the influence of that animal diastase, in order to become fit for absorption and assimilation. But, says the author, what becomes of this sugar? It must participate in nutrition, and in order to do this it must suffer decomposition in the circulating fluids, for in the normal state it cannot be detected in any of the secretions. When it passes unaltered through the kidneys, it may be inferred that some powerful cause has prevented its decomposition, and thereby rendered it unfit for assimilation. This is, then, an abnormal and

pathological occurence which may be regarded as the consequence of the perturbation of another order of chemical phenomena; and this perturbation consists in a want of alkalinity in the fluids of the animal economy. Here the author, grounding himself on his former investigations relative to the digestion and assimilation of amyloid substances, draws the following inferences:—1. The alkalies normally contained in the blood and in the animal fluids are the principal agents of the digestion and the assimilation of saccharine and amyloid substances. 2. Starchy aliments are in all animals transformed into glucose by the agency of the animal diastase, whereby they become absorbable; this glucose, in order to become assimilable, is then transformed by the alkalies of the blood into new products, as kalisaccharic acid, formic acid, ulmin, &c., which bodies are all endowed with a very energetic disoxygenizing power, and probably destined to act as a counterpoise to the respiratory oxygenation. In a healthy subject, the usual alkalinity of the blood is amply sufficient for the transformatton of the saccharine matter, but if this alkalinity be deficient, the tranformation cannot take place; the sugar, being then neither decomposed nor assimilated spreads itself over the economy, becomes a foreign body, and is, as such, cast off, not only by the kidneys, but by all secreting surfaces, and then we have diabetes. The cause of this affection may therefore be traced to a defective assimilation of the sugar, through a want of alkalinity in the animal economy. Human blood is naturally alkaline: we constantly introduce into our system acid elements which would eventually predominate if they were not counterbalanced by especial secretions—viz., the perspiration and urine. So that a healthy man has one kind of secretion always yielding an acid reaction—viz., the perspiration and urine, and another kind with alkaline properties—viz., the saliva, tears, and fæces. So long as these secretions retain their normal chemical nature, the due balance of acid and alkaline principles in the economy is kept up; if they all become acid, we, of course, conclude on a want of alkalinity, and *vice versa*. The former state may be brought on—1st by the ingestion of acids themselves; 2nd, by exclusively azotized food.

Meats, owing to the albuminoid substances to be found in them, contain much sulphur and phosphorus, and those bodies generate sulphuric and phosphoric acids by their combustion within the economy. These agents get diffused through the fluids, saturate at first the alkaline bases they meet with, and at last predominate. 3rd. The want of the perspiring action of the skin, which is intended to throw off acids from the economy. Thus I shall be able to show, says M. Mialhe, that by using means opposed to these three causes mentioned above, we can bring back the economy to its normal state, and excite in it a series of new phenomena. So that it appears possible—1st, to modify, as we please, the fluids effecting nutrition either in animals or vegetables, and obtain a proof of the reality of this modification by the examination of the secretions; 2nd, to invert, by means of the food or medicines, the natural order of the assimilating functions, and thus give rise to a new phenomena, which change the normal products of the organism; 3rd, to control, on the other hand, the accidental disturbance of the organism, re-establish the integrity of its functions, and thus re-constitute life and health.

By applying these consequences to the diabetic affection, the author proposes to restore the vitiated humors to their normal standard, and re-establish the natural order of the assimilating functions, by introducing into the economy the alkali which is wanting, and expelling the acids which predominate by the use of alkalies and sudorifics. When diabetes is produced by a prolonged ingestion of acid substances, unaccompanied by suppression of the perspiration or deep alterations of the organism, the cure by alkalies may, in some degree, be instantaneous. He cites the case of a gentleman who exhibited all the symptoms of diabetes, seemingly brought on by an excess of acidulated drinks during the hot summer of 1847. Five drachms

of bicarbonate of soda with seventy-five grains of calcined magnesia. and two and a half bottles of Vichy water per diem, sufficed to remove all the symptoms in eight or ten days

Now we are ready to do justice to M. Mialhe's indefatigable zeal in organo-chemical investigations; but it must be confessed, that a single case is far from having sufficient weight for establishing a new theory. The author has the foible of most labourers in the field of physiological chemistry. He will needs consider the organism as a regular laboratory; for him the stomach is a still, the liver a filter, the lungs a furnace, and the skin an evaporating apparatus, &c.

MM. Martin, Solon, Bussy, and Rayer, will report upon this paper, of which the above is but an abstract: they will inform us whether the proofs alleged are satisfactory, for hitherto we see but an ingenious grouping of assertions and deductions. We shall therefore recur to the subject, but cannot leave it without remarking with what facility and readiness M. Mialhe harmonizes chemical effects.

For instance: when speaking of the new products resulting from the action of alkalies upon the sugar, he mentions that these products are highly dis-oxygenizing, and immediately adds, that they, according to all probability, serve as a counterpoise to the respiratory oxidation. This appears rather a hasty conclusion. Another passage, which is strongly indicative of the exclusiveness of the author's chemical views, is that wherein he mentions the development of sulphuric and phosphoric acids, attributed to the ingestion of phosphorus and sulphur in meat. These acids, according to him, gradually saturate the alkaline bases in the fluids, and finally predominate. Here, again, we have a chemical reaction, which is simple and natural enough out of the body, assumed as taking place, just in the same way, in the mysterious recesses of our capillaries. Sir James Murray regards the human frame as a Leyden jar; Dr. Parkin, as a gasometer; M. Mialhe, as a laboratory! The humorists, solidists, mechanists, and chemists of old were hardly more wedded to peculiar views.

Lancet, Nov. 25, 1848, *p.* 589.

56.—ON A NEWLY-DISCOVERED SUBSTITUTE FOR BREAD, FOR DIABETIC PATIENTS.—By Dr. JOHN PERCY, F.R.S., Birmingham.

It appears to be now generally admitted, that, in the treatment of diabetes mellitus, amylaceous matter should, in a greater or less degree, be excluded from the diet; but as is well known, under such restriction of the food, the diabetic patient soon becomes weary of the ordinary kinds of azotised matter, as beef, mutton, &c.; hence various substitutes for common bread have been proposed. Some years ago, my friend Mr. Morson, of Southampton-row, London, prepared, at my request, specimens of bread containing gluten in various proportions, but it was only relished by the patient when it contained a considerable quantity of starch; and when the proportion of gluten was increased beyond a certain amount, it became so tough and tenacious as to be extremely disagreeable. I have also made trial of gluten bread prepared at Paris, whence it was brought by Mr. Morson, but with no better success. Recently Dr. Prout has published a receipt for a kind of bread devised by his patient, the Rev. S. Rigg, (*vide* "Stomach and Renal Diseases," fifth edition, p. 44,) and this is probably the best substitute for common bread which has hitherto been produced. Some time ago, Mr. Charles F. Palmer, of this town, prepared, with great care, specimens of bread from Dr. Prout's receipt, but the patients to whom it was given complained of some difficulty in swallowing it, owing to the large quantity of bran which it contained. Mr. Palmer then suggested the use of the matter of rasped potatoes left after the complete removal of the starch by washing, to replace the bran. He carried the suggestion into

practice, and produced a kind of bread which I think deserves the attention of the profession.

It has been employed in the general hospital of this town, especially by my friend Dr. James Johnstone, and also by several private practitioners, with decided advantage. In composition it may be considered as Mr. Rigg's bread, in which the bran has been replaced by the residual matter of the potatoes above mentioned, and in the fact of its being rendered light and porous by hydrochloric acid and carbonate of soda, precisely as is the case with Dodson's unfermented bread.

I here introduce Mr. Palmer's receipt:—Take the ligneous matter of sixteen pounds of potatoes, washed free from starch; three quarters of a pound of mutton suet; half a pound of fresh butter; twelve eggs; half an ounce of carbonate of soda; and two ounces of dilute hydrochloric acid. This quantity to be divided into eight cakes, and in a quick oven baken until nicely browned.

It is, as must be obvious, an expensive article, but with many diabetic patients this will not be an objection of consideration. It is somewhat improved in taste by being slightly toasted. At first, gum arabic, in sensible quantities, was introduced into the bread, on the ground of the assertion of Professor Graham, that when that substance is taken by a diabetic patient, the proportion of sugar evolved from the system is not thereby increased, and that, consequently, it might probably supply matter for pulmonary oxidation. However, it was found that it rendered the bread tenacious and disagreeable, so that its use was subsequently abandoned. I wish it to be understood that whatever merit there may be in the production of this bread, is entirely due to Mr. C. F. Palmer.

My friend Dr. Evans has suggested, and I think with reason, that the bread might probably be improved by the addition of a certain proportion of bran; and accordingly, Mr. Palmer has already made some experiment upon the addition of bran, and with a satisfactory result.

Lancet, March 17, 1849, *p.* 289.

37.—CASE OF RENAL DROPSY PRODUCED BY COPAIBA.—By E. Thomas, Esq., House Surgeon of the Cumberland Infirmary.

[The patient was a man who was taking copaiba for a gonorrhœa; being anxious to get well soon, he took twice the quantity that was ordered:]

When he presented himself at the infirmary, his legs and thighs were œdematous, besides a little effusion into the abdomen. His urine was of a smoky color and very albuminous. He was cupped on the loins, and ordered a drachm of compound jalap powder twice a day, and a warm bath twice a week. This treatment was continued (though less vigorously until the end of July, when he was discharged well. I have since repeatedly examined his urine, and always found it healthy. I may remark, that all the information elicited from him tends to show that the drug with which he over-dosed himself had produced the disease. He had none of the early symptoms of granular disease of the kidney, though for many years when obliged to do extra work he has been subject to *lumbago*. At that time there was no scarlet fever near his house, though it was very rife in other localities of the town, nor had he been exposed to wet and cold. It may not be unreasonable to suppose, that copaiba, when not producing purgation, may cause in some mysterious manner, so much disturbance in the renal capillaries, as to bring on, like the scarlet fever poison, renal dropsy.

Medical Times, Dec. 9, 1848, *p.* 144.

SURGERY.

DISLOCATIONS, AND DISEASES OF BONES AND JOINTS.

58.—CASE OF EXCISION OF THE UPPER END OF THE FEMUR.—By H. Smith, Esq., late House Surgeon to King's College Hospital, &c.

[The patient, a man thirty-three years old, has been affected with disease in the left hip-joint for many months, and the head of the bone had slipped upon the dorsum ilii, but no attempt at anchylosis had taken place. The patient, who had been a fine tall man, was becoming much wasted from suppuration. Mr. Smith was sent for to the case by Dr. Milroy. He says:]

After carefully looking at this case, I expressed my opinion to Dr. Milroy, that it was one of those in which the surgeon might take into consideration the propriety of some operative proceeding—of an exploratory character, at least,—and then act according to circumstances. It appeared to me that the head of the bone was the part principally affected; and, that lying as it did in its abnormal situation, it was acting as the source of irritation, and was gradually destroying the patient. It was evident there was no disease of a very serious nature in the pelvis. Taking this into consideration, and to what an extremity the patient was reduced, I did not hesitate to regard this case as one for which the operation of excision of the head of the femur was adapted. It was determined, however, that we should be in no hurry about the operation, but would watch the patient, and examine him carefully from time to time.

[Several gentlemen, including Mr. Fergusson, took the same view of the case; and the operation was accordingly performed on the 14th of June:]

Operation—The patient having been placed under the influence of Chloroform by Dr. Snow, and laid on a table on his right side, I commenced an incision over the head of the bone, and carried it to the extent of about seven inches in the direction of the shaft of the femur. By this the head of the femur was exposed, and it was discovered lying in the midst of an abscess, and in a carious condition. The tissues were then cleared away from the neck and trochanter, and in order to effect this with more ease, a small incision at right angles with the first was made. The limb was then carried across the other, and by this means, and the fingers of the assistant, the upper end of the bone was thrust out of the wound as much as possible. The knife was then carried carefully round below the great trochanter, and with a common saw, the section of the bone was made. The condition of the acetabulum was then looked to, and a portion of the rim being found carious, the bone forceps were used there; the gouge was also applied to a small bare spot at the bottom of the cavity. The wound was then stitched together, and water-dressing was applied. No vessel required a ligature. There were not more than four ounces of blood lost. The portion of bone removed measured a little more than three inches in length, the section having been made just below the great trochanter. The disease was wholly confined to the articulating surface, which was entirely denuded of its cartilage and carious; some imperfect granulations existed over some portion of it. Since maceration, the bone has presented a most beautiful perfect specimen of caries.

One hour after the operation, the patient appeared in a comfortable state; he remembered nothing about it. Complained of some pain in the wound, from which a slight oozing of blood existed. Pulse 84. To have nothing but a little thin gruel and cold water. Eleven P.M., he has been dozing a

good deal since the operation; feels pretty comfortable; oozing from the wound has stopped; pulse 104.

June 15th.—I was delighted, when I entered his room, to see this patient doing so well. There has been no shock at all; he has passed a comfortable night; febrile action moderate; tongue slightly furred; pulse 120, very feeble; complains of thirst; wound looking healthy; takes nothing but gruel and barley water. I dressed the wound with warm water.

[For a considerable time the case went on very well: the wound was almost healed, and there was a considerable degree of motion in the limb. Towards the latter end of Sebtember, however, symptoms of disease of the kidney appeared, and he died from his disease on the 1st of November. This was the first time that this operation had been performed on the adult in this country. Mr. Smith makes the following remarks on the mode of operating:]

As regards the manual part of the operation, I must state that it is not of so formidable a nature as some may suppose. It requires a knowledge of the healthy and morbid anatomy of the parts, a little nerve and firmness, and a facility in the use of instruments, especially the saw. I have heard surgeons of undoubted skill in operating, recommend only one incision, as the wound will subsequently more readily heal, and the cicatrix becomes less unsightly. But in such an operation as this, I fancy these are very minor considerations; there need be no hurry in healing up the wound, for should union take place rapidly, the discharge, which is necessarily great after the operation, will not come freely away, and will probably cause trouble. In the present instance, I found that by making a small incision in a right angle to the first, I was enabled to clear away the hardened tissues from the bone with great facility, and had very little trouble with the saw.

With respect to this instrument, several modifications have been recommended for this particular purpose, and I was somewhat amused with the ingenious contrivances suggested to me by various friends before I performed this operation; but I preferred using the common hand-saw, and I found it answer admirably. I recollected that the chain-saw had failed in the hands of such men as Mr. Fergusson and M. Roux.

Lancet, Nov. 25, 1848, *p.* 579, *and Dec.* 9, *p.* 627.

59.—ON EXCISION OF THE HIP-JOINT.—By Professor Fergusson, F.R.S., &c.

[A case is related of hip-joint disease of more than two years standing, occurring in a girl ten years of age. After she had been a short time in King's College Hospital, the following is the report:]

Jan. 11th.—Mr. Fergusson, at the visit to-day, enlarged an opening over the head of the femur, and removed a portion of necrosed bone which was loose; the head of the femur was detected in a carious condition. After a careful examination, Mr. Fergusson considered that the head of the bone was the part mainly affected, and he therefore resolved to remove it.

13th.—Half-past one P. M.: Mr. Fergusson excised the head of the femur. He began by making a perpendicular excision over the upper end of the bone, about four inches in length, which cut through the skin and adipose tissue. This was joined by another transverse cut; the soft parts, which were found much thickened and altered in their appearance, were then dissected away from the bone; the limb was next rotated inwards, so as to throw out the upper end of the thigh as much as possible; and the saw was applied below the trochanter major, and the head with that process removed. The head of the bone was much reduced in size, and carious. The cotyloid cavity was found in a healthy condition; in fact, there was hardly any trace of it, it being filled up with new bone. The edges of the wound were brought together by stitches, and the patient was put to bed. No vessel required ligature. In the evening, she complained much of pain,

particularly in the knee. She had vomited, in consequence of the chloroform used in the operation.

[After relating the subsequent history of the case, which was completely successful, Mr. Fergusson goes on to say:]

There is little comment needed in such a history as this. Here was a poor girl in the extreme of suffering, every day and hour of her life embittered by pain, to whom there was little prospect of relief by the ordinary aids of surgery, suddenly, and by a very simple proceeding, strictly in accordance with the precepts of modern surgery, rescued from her distress, and in the short space of six weeks so far restored to health, that she could sit up in bed, walk about on crutches and move the limb on the affected side, which she had not done for years. But there is no description required to convince you of the benefit conferred on the poor girl. Her appearance during the latter part of her stay in the hospital, (and, I may add, the grateful expressions of her parents), was such as to satisfy us all on this score. Only glance at what would have been the probable career of this case had this treatment not been resorted to. After years of suffering a spontaneous cure might have ensued; or, what is more probable, the continued irritation arising from the disease, or possibly from disease of some other organ, coming on chiefly in consequence of the exhaustion and defective development induced by this continued misery, the patient would have been consigned to an early grave.

Let me now draw your attention to the circumstances which induced me to follow the course pursued in this instance. Here is the cast of the hip of a boy who was under my care in this hospital some years ago. Hip-disease in its most aggravated form was present, the boy was fast dying. There was an opening on the hip through which I could detect the head of the bone more distinctly than I could in the case just narrated. The bone was bare, and presumed to be in a carious condition. There was no evidence of disease elsewhere. I thought the opportunity an admirable one for carrying out those views regarding the treatment of caries, which I believe may be said to be characteristic of the improvement of modern surgery—views which induce the surgeon to remove carious bone by an operation, when and where he can safely do so, so soon as he is satisfied that nature, unaided, is not likely to effect a cure. I thought if this cause of irritation were removed, the remaining parts would speedily heal, and I resolved to give the boy this chance of relief. I did not, however, come to this resolution on the spur of the moment; it was after mature reflection, and after consultation with my colleagues and others competent to give an opinion on such a question. I had even a precedent for the proceeding, and I beg your particular attention while I read the first case of the kind which ever happened. The case is less known than it ought to be, and such of you as may not have read through the Surgical Dictionary of Samuel Cooper, will not have seen, in the article on Bones by that able and much lamented Professor, the interesting history of this case.

John W., a twin, of delicate make, was born and resided in Westminster. When between four and five years old he suffered from scrofulous inflammation in the left hip-joint, which passed through the stages of elongation, dislocation, and subsequent retraction, and the femur was finally lodged in a very high position on the dorsum of the ilium.

About three years subsequent to the commencement of the disease, and when he was about eight years old, I first saw him. He was much emaciated; several abscesses had formed during this period over and around the diseased structures, leaving many fistulous openings, through which the probe easily detected the surface of the displaced bone to be in a state of caries; and several small exfoliations had occurred, from the ilium, ischium, and os pubis, over which bones abscesses had formed.

In the progress of the disease, the knee of the affected limb had become inverted, and firmly imbedded on the lower and inner part of the opposite

thigh, from which position it could not be removed, and every attempt to do so was accompanied with exquisite pain. All further attempts were abandoned, and the limb was left undisturbed. He had now lain three years on the opposite side, with the body considerably incurvated, and without the power of changing his position. A profuse and debilitating discharge was constantly issuing from numerous apertures leading to the carious surface of the displaced bone. In other respects the health of the boy was tolerably good. Reflecting on this poor boy's case, it was evident, that unless the knee could be removed from its firm lodgment on the opposite thigh, he must remain in the position above described for the remainder of his life. And this could only be effected by removing the upper part of the femur, which, from its trifling mobility, induced the belief that a firm union was taking place between its under surface and that of the ilium, with which it had been long in contact, and the form of which was very apparent under the thin integuments with which it was covered. Considering, also, that as an entire destruction of every texture which forms a healthy joint had taken place, no danger could be reasonably entertained from meddling with parts in their existing condition, and attempting the removal of the head of the displaced bone; and further, that the strength of the boy, from the profuse discharge kept up by the caries of the bone, was never likely to be restored—I was induced, after mature reflection, to propose an operation for the removal of the upper part of the femur, as far as it should be found in a state of caries, which, from the examination with a probe, appeared to extend probably a little lower than the great trochanter. If this could be accomplished, it would set free the lower portion of the bone imbedded on the opposite thigh, and enable me to draw outwards the whole limb, and possibly place the boy in a condition equally favourable with those cases where a similar disease had occurred, and in which a compensatory joint is formed, on which locomotion is effected, with or without the aid of a crutch. I proposed to divide the integuments covering the bone, beginning above its head, which was easily detected, and carry it downward in the centre as low as might be found necessary, and separate the soft parts from the shaft of the bone on either side. I then proposed to divide the bone at the lowest exposed part, with a small saw, and elevate it with a lever, from the dorsum of the ilium. I hoped that the wound would heal over the divided end of the bone, which (now being set free) might be brought into a straight line, and which motion would incline deeply into the wound the end of the divided bone. The wound itself was to be treated as a common incision, with adhesive plaster and bandage, and rigid quietude. My colleague, the late Mr. Morel, saw the case, concurred in the proposition, and offered to be my assistant. The late Mr. William Smith, member for Norwich, and to whom the mother of the boy was well known, informed the late Sir E. Home of the proposed operation. The boy, at his request, was conveyed to St. George's Hospital, and after an examination of the case with his colleagues, a written document, signed by him and them, was given to the mother of the boy, declaring that the contemplated operation would not only be useless, but impracticable, and most likely, if attempted, be attended with loss of life. I was not present at this consultation, and only knew of it by being shown this document, or protest, by the boy's mother. Of course, with such a published declaration, I abandoned the case altogether. After the lapse of some months, Mr. Travers, whilst attending at Mr. Smith's house in the city, to which the boy had been removed with his mother, was requested to look at him; and being told of the proposed operation, by the mother, who was an exceedingly intelligent person, at once saw and understood the principles and plan of the proposition. He subsequently wrote me a note, expressing his entire concurrence in the measure, and kindly offered to assist me in the operation, notwithstanding the formidable protest which had been issued shortly before. Glad of the concurrence of so distinguished an individual, and my own

opinion as to its practicability being unchanged, I gladly accepted of the offer. A lodging in Westminster was procured for the boy and his mother. We met in consultation, and an early day was fixed for the operation. In April, 1821, we met, and the boy being placed on a table of convenient height, I proceeded to divide the integuments covering the bone, carrying the incision from an inch above the head, directly along the middle line of the bone, about two inches below the great trochanter; this was completed at one incision down to the surface of the bone. The integuments were dissected inwards and outwards, thus baring the bone entirely a little lower down than the lesser trochanter, which was distinctly visible. A spatula was now placed under that part of the bone which was intended to be sawn through, so as to protect the structures underneath. This was readily accomplished. A small spatula was then introduced into the space made by the saw, and used as a lever to raise the bone, which, with a little dissection was removed, from the dorsum of the ilium. No vestige of the acetabulum remained, neither was any caries of the ilium discovered. The thigh was now readily brought into a straight line, and the knee liberated from its position on the thigh. The wound was closed with adhesive plaster, and no portion of the bone was left exposed. Splints and an eighteen-tailed bandage were applied, and the limb placed in the straight position. The boy bore the operation well; not more than two ounces of blood were lost. The head, neck, and trochanters were very apparent, the caries being superficial, and not extending lower than the lesser one. The case proceeded very favourably, and in a few weeks every sinuous opening had healed, and also the incision made in the integuments. The patient rapidly acquired strength and flesh.

At the end of two months I began to examine the parts, to ascertain if they had formed any attachment to the surrounding structures, and on attempting to move the limb in different directions, I discovered that the boy himself had the power of raising the thigh upwards, which gradually increased, and finally a very extensive motion was accomplished by the spontaneous action of the muscles. I now proceeded to examine whether he could bear pressure on his foot without inconvenience, which was the case at the expiration of about four months from the time of the operation. He was put on crutches, and in a very short time could bear considerable pressure upon his foot, and at the end of a year could walk on a high stirrup without crutches. Finally it was clearly ascertained that a new and useful joint had been formed, the boy being able to walk several miles without the use of crutch or stick. He acquired greater latitude of motion, except rotating the thigh outwards, and separating the thigh laterally outwards. He was apprenticed to a ladies' shoe-maker, and five years after the operation he became phthisical, and died of diseased lungs, in the Westminster Hospital. The limb was removed, with half the pelvis, and is in the possession of the Royal College of Surgeons; but the parts have not yet been examined, in order to ascertain the changes which had been so usefully employed in giving almost a perfect joint as a compensation for the original. The shaft of the femur appeared to have lost the power of further elongation, for on frequent admeasurement during the life of the patient, it was discovered not to have increased in length. Probably the fact is not generally known, that bones do not increase in length after the amputation of their heads.

[The operation of excision of the head of the femur, is obviously only applicable in a few cases. Mr. Fergusson says:]

I am anxious that you should not misunderstand me about this operation. Do not for an instant suppose that I bring it forward as *the* treatment for hip-disease. I advocate the practice as applicable to certain cases only, and these cases seem to me so few in number, that years may be passed in active practice ere such an instance may come under the surgeon's notice; but when such are met with, I conceive that the principles on which

we treat caries, where there seems no disposition to a spontaneous cure, are as eligibly applicable here as in all other parts of the body where we are in the habit of cutting away carious bone. *Lancet, April 7, 1849, p. 369.*

60.—ON HIP DISEASE.—By PROFESSOR SYME, Edinburgh.

[After alluding to the severe measures formerly adopted in the treatment of hip-disease. Mr. Syme says:]

The great object now held in view is to prevent motion of the joint, and this is effected by means of mechanical support, in addition to the horizontal posture. The splint employed should not be limited to the neighbourhood of the hip, but be made to extend over the whole length of the limb and a portion of the trunk; or, in more precise terms, from the sole of the foot to the false ribs, since it is only by preventing motion of the knee, and ankle also, that the hip-joint can be maintained in state of perfect rest. Together with this local treatment, due attention is of course requisite in regard to the diet and state of the digestive organs. Cod-liver oil, which so remarkably corrects the condition of system that predisposes to derangements of the scrofulous kind, should, at the same time, be freely administered.

Under this simple and gentle mode of treatment, steadily pursued, a large proportion of cases terminate favourably, without any alteration of the *limb* in regard to form, mobility, or strength. On some comparatively *rare* occasions, the pain continues without abatement, or increases in *severity*, and then counter-irritation becomes requisite. For this purpose the actual cautery affords by far the most efficient means, and if employed during the influence of chloroform, is divested of the only objection that can be alleged against its use. The sore established should not exceed three inches in length, and one in breadth.

In the event of suppuration taking place, the abscess should not be opened until it has nearly approached the surface, when an aperture of adequate size, and so situated as to afford a free drain from the discharge, becomes proper. Water-dressing is preferable to ointments and the long splint; or if the limb has been allowed to get into a position which prevents the employment of this, a piece of leather, fashioned to the shape of the hip and thigh, should be still carefully applied, to prevent the irritation attending movement of the joint, great attention being at the same time paid to the maintenance of the patient's general health and strength. The result depends chiefly upon the state of the bones composing the joint. If they are carious, he *must* die; if they are not, he *may* recover. The risk of caries being induced, is proportioned inversely to the age of the patient; so that the prognosis becomes less and less favourable from childhood to maturity.

Some operations have been lately performed in London, with the view of remedying caries of the hip-joint, by cutting out the head of the thigh-bone; but this proceeding must have originated and been conducted in forgetfulness of the well-established pathological fact, that when caries attacks the surface of a joint, it is never limited to one of the bones which compose the articulation. If the articulating surface of the head of the thigh-bone be carious, it follows as a matter of absolute certainty, that the acetabulum must be in a similar condition. But as the acetabulum does not admit of removal in the living body, with any prospect of safety or advantage, no benefit can be derived from taking away a part of the articulation, and therefore, excision of the head of the thigh-bone for caries of the joint should be regarded as no less erroneous in theory than objectionable in practice.

In an old volume of the Lancet it is stated, that Mr. Syme cut out the head of the humerus for disease of the shoulder-joint leaving the glenoid cavity to "shift for itself"—the fact really being that the patient laboured under

necrosis of the upper end of the bone, so that the head was expanded into a thin shell containing an exfoliation, which was removed with the effect of preventing amputation at the shoulder-joint, previously deemed requisite, and enabling the subject of the case, then a boy, to grow up into a strong healthy man. This statement, like others, having no foundation except in the depraved imagination of their authors, was treated with the silence that it deserved, and would not be noticed now unless there seemed a risk of its being stumbled on by some one in search of authorities for bad practice. It is true that Mr. Syme did once cut out the head of the humerus for caries, but in that case the disease, instead of affecting the surface of the bone, which was perfectly sound, had hollowed out the interior substance into a cavity, so that the circumstance of the patient recovering the use of her arm, and enjoying good health for ten years after the operation, in no wise invalidates the rule, that caries of an articulating surface is never limited to one of the bones which compose the joint.

In the London operations the hip-joints must have been either carious or not; and the proceeding, therefore, either useless or unnecessary. That it is possible for patients labouring under disease of the hip-joint to recover, after excision of the head of the thigh-bone, could hardly be doubted by any who has remarked the shrunk and distorted limbs which result from morbus coxarius, terminating in anchylosis, or examined the preparations illustrative of this condition obtained after death. The scars of old sinuses, and the histories of persons who have regained good health after suffering from hip-disease in their youth, frequently afford evidence that the joint must have suppurated; that the articular structure must have been seriously deranged; that the respective surfaces of the bones must have been more or less extensively denuded of their cartilaginous covering; and that there must have been great displacement before consolidation was accomplished by anchylosis. It is very probable that in some of these persons the head of the thigh-bone might have been cut out during the suppurative stage, without preventing recovery, especially if the most careful attention had been subsequently bestowed upon the maintenance of the patient's strength. But in what respect they would have derived benefit from the operation it is not so easy to see.

In his lectures on anatomy, Dr. Barclay used to make frequent mention of those observers who "see what they believe, and do not believe what they see." It is doubtless to some such peculiarity of mental vision that must be ascribed the opinion lately expressed as to the cause of death in a case of the operation in question.* The patient had sunk with the ordinary symptoms of exhaustion, and was found upon dissection, to have not only the "whole extent of the cotyloid cavity bare and rough," but also the lumbar vertebræ "carious in portions of their bodies;" but yet the operator does not hesitate to affirm that there "is little doubt that the real cause of death was the disordered condition of the kidneys!"—this disordered condition being referred from something in the secretion, supposed to have been ascertained by microscopic examination. If all the other cases in which the operation was performed were fully reported, there is reason to believe that the results would appear by no means satisfactory, as anticipated through the sanguine expectation of youth not sufficiently qualified by the the sober reflection of experience.

But even in the event of recovery being ever really accomplished, the satisfaction afforded by it must always have the painful drawback of conviction, that as only half of the joint was removed, there could not have been caries present; or, consequently, any warrant for operative interference.

Lancet, March 10, 1849, p. 266.

[These remarks have been replied to by Mr. H. Smith. After answering

* Mr. Smith, the Lancet, December 9, 1848, p. 627.

Professor Syme's animadversions upon the cause of death in Mr. Smith's case of exision of the head of the femur, Mr. S. proceeds to say:

Mr. Syme protests strongly against this operation, and states that "excision of the head of the thigh-bone for caries of the joint, should be regarded as no less erroneous in theory than objectionable in practice." And why? Because he states that the acetabulum is always diseased, and that it will not admit of removal. This is the grand argument with the opponents of this operation; but those who use it are either forgetful or ignorant of the changes which take place in disease of the hip-joint of long standing. Admitting that caries usually involves the acetabulum to some extent, I nevertheless can affirm, from my own experience and knowledge, that there are certain instances in which serious disease is confined to the head of the femur while none exists in the pelvic side of the joint. In all the successful cases in this country there was no disease of the acetabulum at the time the operations were performed, although probably there had been caries at a previous period of the complaint. In all of them the acetabulum was found to be so contracted as to leave hardly a vestage of the natural cavity, or it was filled up with new bone, which had been thrown out in the process of reparation, and yet with all this, the head of the thigh-bone lay in its abnormal position, in a more or less carious condition, causing all the severe disturbance which was noticed in each case. Such, I apprehend, will be the condition of the parts in those cases in which this operation should be performed; and it is by no means difficult to understand how it happens that the disease in the acetabulum stops, whilst that in thigh-bone persists. Every surgeon is aware how, in caries of joints, new bones becomes deposited around them; and more especially how the sockets of joints become altered in their shape and appearance.

In the instance of disease of the hip, after dislocation, and consequently after the removal from the socket of a foreign body, (which in fact the carious head of the femur must be,) a reparative process goes on, and new bone fills up the original cavity; whilst the head of the femur, from its large globular form, and from its peculiar texture, rarely takes on this process, but remains in its abnormal situation, acting essentially as a foreign body; therefore I cannot agree with Mr. Syme in considering the operation "erroneous in theory;" and as regards the practical value of the operation, this had been ascertained fully by Mr. White, whose death we have just now to deplore, and Mr. Fergusson, and those who will attentively read the history and symptoms of the cases published by these gentlemen, will be convinced of this; or if any gentleman will take the trouble to pay a visit to King's College Hospital at the present time, he will see striking evidence of the benefit of this operation in the case of the little girl on whom Mr. Fergusson operated about two months since. She is now able to move about the ward, and with the aid of crutches is able to put her foot to the ground.

But, in his attack upon this operation, Mr. Syme has entirely overlooked the main objection to it. He has not hinted at the great liability there is in such cases to the implication of some important organ in the scrofulous disorder, which is, for the most part, the cause of hip disease. It is here that the main difficulty lies; and here, I am afraid that superficial observers and *too ardent operators* will fall into error. This operation, I am persuaded, might be accomplished in many instances with success, were it not for the fact of co-existent disease. I have at this present moment under my care a little patient in whom the condition of the hip is such, that I should not hesitate to resort to the operation; but the liver is enlarged, I suppose by some scrofulous or fatty deposit. In such an instance, it would, of course, be worse than useless to cut out the head of the femur. Further experience of this proceeding will soon settle the question as regards its propriety; and although the opinion of so eminent an authority as Mr. Syme will, to a great degree, retard its general adoption, at the same time, the opposition

of one authority alone, however distinguished, will not, I am sure, in a liberal profession like ours, have the effect of causing the hasty abandonment of a proceeding which has been proved in several instances to be so eminently serviceable to those unfortunate beings who suffer from intractable and incurable disease of the hip-joint. *Lancet, March* 17, 1849, *p.* 300.

61.—ON THE TREATMENT OF DISEASED JOINTS.—By J. P. Vincent, Esq.

Among counter-irritating remedies for the treatment of diseased joints and similar maladies, the author assigns the preference to the issue formed by caustic potass. This, he argues, induces a more elaborate train of healthy actions than by any other means. Blistering is less effectual, and to some not less irritating. The issue is particularly useful in disease of the synovial membrane of the knee-joint. Mechanical aids and means are of no use. Rest in bed on the side alone affords relief, and furnishes that state of quietude which is favorable to the removal of the diseased action. The author has rarely seen the synovial disease proceed to a destructive result, where the case has been actively treated by means of issues. In cases even named ankylosis of the knee-joint, the real seat of the junction is between the patella and the part of the femur in which it is lodged. The extensor muscles are then unable to extend the limb. Would it not be correct to say, rather, that as the disease is mostly seated between projecting points of the femoral condyles, and the fore-part of the head of the tibia, as well as inside the *patella*, so the only way to remove these parts from hurtful pressure, is by half bending the knee. Thence the extensor muscles are not permitted to act, because their contraction puts the diseased part in a painful position, while the flexors instinctively bend the two bones, so as to draw them out of this painful position. If, in this state of the joint, the leg be extended on the thigh, by external means, however gently and however slightly, the flexors instinctively bend the former bone on the latter. *Ed. Med. and Sur. Jour., Jan.*, 1849, 191.

62.—OBSERVATIONS ON DISLOCATION.—By J. P. Vincent, Esq.

[Mr. Vincent thinks that what is termed "lifting the head of the bone into the socket," is not a practical operation.]

The laws of motion show, he adds, that this cannot be done, except by a power little less than that laid upon the line of traction (extension). "I have often seen," he says, "this lifting of the bone attempted, but only to prove the impossibility of accomplishing it." The author properly observes, that the surgeon cannot be said to effect the reduction. His efforts are limited to that of drawing the bone so near the glenoid cavity as to bring the muscles into a situation to remove that association in which all these actions have been accustomed to take place; in other words, in which they all concur to draw the bone into its normal position and retain it there.

[On the subject of old standing luxations, Mr. Vincent observes:]

Some years ago, a patient was brought from the country into St. Bartholomew's Hospital, who had a dislocation of the thigh of some weeks' duration. The first surgeon who saw him had not detected the luxation. After some weeks a second surgeon saw him, and at once knew what had happened. He adopted the usual means for reduction without success. The patient was then, at the end of six weeks, sent to London. I adopted the usual plan of extension from a fixed point, and readily brought the head to the natural range of the joint; but no contrivance could shoot the head of the femur into the acetabulum. I was not contented with one trial; I failed in at least three. This occurrence led me to reflect on the principles

on which the treatment of dislocations rests. I am now convinced, that in recent luxations, there is a power independent of the operator, which can, in spite of the force he employs, and in opposition to the direction of it, thrust the bone into its place; so that it is really the absence of this power of muscles that is the reason why old luxations of this sort are not reduced in the way the operation is usually conducted.

A case presented itself to me, in which the humerus had been luxated seven weeks, extension was conducted in the usual way for a long time, and with the fullest force, and no reduction resulted. I then drew the limb across the chest obliquely, and by this means returned the head of the bone into the glenoid cavity with very little effort. A maid-servant fell down stairs and injured her shoulder; a practitioner living near was sent for, who was not aware it was a luxation. The mistress sent her to me at the end of six weeks; I saw the nature of the case, and took her to the hospital. I first tried the usual plan in vain; I then placed a thick body just in front of the axilla; and by first drawing the arm down, and then carrying it across the chest over the body, the bone slipped easily into its place. The perfect use of the limb was ultimately recovered. Thus it is not by the force of extension, but by the adaptation of appropriate manipulation, that old cases are to be reduced. The bone is easily replaced, and as easily put out again, so that a long observance of immobility must be insisted upon after the reduction, before the limb will become quite restored. Of course there is a limitation to the period of the propriety of trying reduction in old cases, as the power of accommodation is so unfailing, that changes too great may occur, after much time, to justify the interfering with this settled order of things.

I consider that it is highly proper for the security of the joint, that the limb, after a luxation, should be kept at rest for some weeks. A brewer's man was brought to St. Bartholomew's Hospital, with a luxation at one hip and at one shoulder. He was kept in bed a month after the reduction, but allowed to move his arm. When he left, he felt nothing of the hip, but he suffered pain in his shoulder. A female, of the order of fishwomen, was brought to the hospital with dislocation of the shoulder; the bone was reduced, and she chose to go out, and immediately resume her occupation of carrying a basket on her head. The dislocation very soon recurred, and again and again, she applied at the hospital for the same purpose, it slipped out so readily. But as the old method of mere traction was employed, it became more difficult to effect the reduction, so much so that at last she had to stay in the hospital some days before it could be accomplished. *Edin. Med. and Sur. Jour., Jan., 1849, p. 163.*

63.—ON DISLOCATION OF THE HEAD OF THE FEMUR BACKWARDS.—By Richard Quain, Esq., Surgeon to the University College Hospital, &c.

[Mr. Quain has arrived at the following conclusions respecting the so-called "dislocation unto the sciatic notch."]

In the ordinary form of the dislocation backwards, the femur does not reach the sciatic notch. The head of that bone is lodged immediately behind the acetabulum, over the base of the ischiatic spine and opposite to a small part of each of the two sacro-sciatic foramina.

The advanced position of the displaced limb at the knee, and the situation of the foot, "the toe resting against the great toe of the other foot," are not necessarily present in this dislocation. During the extension made to restore the bone to its place, the thigh is most advantageously directed across the pelvis, so that it shall form a right angle, or nearly a right angle, with the abdomen.

At the same time the limb is to be in a state of abduction. The femur is thus drawn away from the pelvis forwards and outwards. And the knee is to be bent, the extending force being fixed above this joint.

Med. Chir. Trans., 1848, p. 351.

61.—CASE OF DISLOCATION OF THE ASTRAGALUS, IN WHICH REDUCTION WAS ACCOMPLISHED.—By MM. THEVENOT and BOYER.

As dislocations of the astragalus are very rare, we are induced to record the following, which occurred lately in the practice of MM. Thevenot and Lucien Boyer, as published in *L'Union Medicale*. On the 8th of September, 1848, a glazier, thirty-eight years of age, of strong make and robust health, fell from his horse, which had stumbled. He was so much stunned that consciousness was entirely lost for a few minutes, and when he came to his senses, he could not stand upon the right foot. M. Thevenot, who saw him soon after, at once perceived the nature of the mischief, which consisted in a complete displacement of the astragalus inwards. The patient could, however, give no account of the manner in which the foot had turned. M. Lucien Boyer, whose assistance was requested by M. Thevenot, found the parts in the following state. The heel is resting on a pillow; the anterior aspect of the foot forms a right angle with the leg; neither the latter nor the heel present any lengthening nor shortening. The sole of the foot is neither adducted nor abducted; the extremity of the same is turned neither inwards nor outwards, but by mere inspection it may be seen that the whole foot has been carried outwards, so that its axis, instead of being continuous with that of the leg, is about an inch external to it. This causes the outer malleolus to be somewhat masked by the external border of the foot. As there is but little swelling around the joint, it is easy to follow the different projections of bone. By running the fingers down the fibula as far as the malleolus, it is ascertained that this bone is perfectly sound; under this malleolus is found a large cavity, into which the integuments may be pushed without meeting with the bottom of it; this cavity is also a little prolonged forwards under the extremity of the tibia, in front of the articular surface of this bone, which circumstance allows the finger to discover that the relative position of tibia and fibula has not been disturbed. This cavity is bounded inferiorly by the superior aspect of the os calsis, which may easily be felt, and the hollow does not seem to contain much effused fluid.

Towards the inner part of the joint, the tibia and malleolus are found intact, and forming a projection on the inner part of the foot. A large, polished, and hard surface is here felt lying immediately under the skin, which latter is powerfully stretched. This surface which looks quite inwards, is manifestly the articular pulley of the astragalus, with its antero-posterior convexity, and its slight concavity from side to side; the margins are likewise easily felt. In front of this surface, the depression formed by the neck of the astragalus is felt, as is also the head of this bone a little further forward. The summit of the inner malleolus is strongly resting on the external surface of the astragalus, which has become superior. The skin in this spot is smooth, stretched, discoloured by the pressure, but not perforated. Nothing abnormal is preceptible on the posterior part of the joints; the tendo-Achillis is not more stretched than usual: the personæal tendons may be felt behind the outer ankle, but it is impossible to follow the tendons which pass under the inner ankle, on account of the great tightness of the skin over it. Voluntarily movements with the foot are impossible, and the motions communicated to it by the hand are very limited in every direction, or rather, there is no motion at all, and great pain when trials are made. No attempt at reduction was made the same evening, it being agreed that they should be put off until the next morning, when chloroform would be used; but, M. Boyer, aware of the difficulties in the way of such a reduction, and considering the solid impaction of the bone, made up his mind, in case of failure, to remove the astragalus. The patient and his friends were therefore apprised of the gravity of the case, and of the possibility of an operation being performed. Meanwhile continuous irrigations of water, at the ordinary temperature, were ordered to the part; a composing draught was given, and a pretty large amount of blood taken from the arm. The

next day the foot presented little alteration, except some ecchymosis, particularly on the inner part of the joint; there was very little fever, but the patient was very anxious and uneasy. Anæsthesia was induced by chloroform, and as soon as it was complete, two assistants were desired to make counter-extension on the thigh, the leg being half flexed, with the inner aspect looking upwards. Two other assistants placed each one hand on the heel and the other on the foot, to make extension, and rendered it very effectual by superposing their hands. In spite of the slight hold thus obtained, a considerable lengthening was effected, owing to the relaxed state of the muscles. M. Boyer, seizing then the external part of the joint with the four fingers of each hand, tried to push the astragalus into its place, by pressing it with both his thumbs. The bone was easily driven into the place made by the extension, but it retained its vicious direction, and the displacement recurred immediately the extension was lessened. Several such attempts having failed, the surgeon seized the moment when the limb was considerably extended, and pushed the external margin of the foot very powerfully with his knee, so as to produce an exaggerated abduction of it, whilst, at the same time, he pressed with all his might on the superior border of the astragalus with both his thumbs. This contrivance was followed by complete success. The displaced bone turned up, and resumed its wonted position with a loud crack, which was readily felt by all those whose hands were upon the patient, and heard by all unprofessional persons in the room. The deformity had completely disappeared; the hollow under the external *malleolus* was filled up: under the internal, where the skin had been stretched by the articular surface of the astragalus, a sort of fluctuation was now perceptible, without any tension of the integuments, owing very probably to an effusion of blood. The shape of the foot became again normal; passive and even slight voluntarily motion gave no pain. A rather tight roller was applied, from the toes to the leg, and the irrigations were continued. Four days afterwards the irrigations were given up, and a simple roller, wet with lead lotion, was put on. No feverishness occurred: the ecchymosis and the sanguineous effusions were gradually absorbed, and the patient, although not allowed to walk, was, in the space of a month, in a very satisfactory state, and it was hoped that no lameness whatever would be left. Further accounts have shown that these hopes were well founded; the patient is completely cured and walks well. Both the surgeon and his patient may be congratulated on the happy issue of this case. It is clear that the inhalation of chloroform had a large share in the success of the treatment, and although it can hardly be said that without it the reduction would have been impossible, it seems pretty certain that M. Boyer would have had to surmount greater difficulties had no anæsthesia been induced.

Lancet, Dec. 2, 1848, p. 612.

65.—CASE OF DISLOCATION OF THE ASTRAGALUS, IN WHICH REDUCTION WAS ACCOMPLISHED.—By J. G. Crosse, Esq., Norwich.

[At a meeting of the Norwich Pathological Society.]

Mr. Crosse gave the history of this case, which had been admitted under him in the Norfolk and Norwich Hospital. The patient had been thrown out of a dog-cart, but could give no description of the way in which he fell. Upon his admission the limb presented all the symptoms of dislocation of the astragalus, the sole of the foot being turned inwards, and the foot resting upon its outer edge, while that end of the astragalus which articulates with the os naviculare, was dislocated upwards and outwards, lying just under the skin. Neither tibia nor fibula were fractured. In reducing it, extension was made from the knee direct, and the heel grasped by assistants, who applied their force in this direction with one hand, the other being placed upon the dorsum of the foot, he at the same time endeavouring to

favour the return of the bone by immediate pressure on the dislocated end. To these means it yielded but slightly, and finding the tendo-Achillis very tense, he divided it with a tenotomy knife, and upon resuming the extension, the bone was returned somewhat suddenly into its place after a few minutes, and the shape of the limb quite restored. Chloroform was administered in this case, but not very successfully.

Prov. Med. and Sur. Jour. Dec. 13, 1848, *p.* 693.

66.—CASE OF EXCISION OF THE OS CALCIS.—By T. M. Greenhow, Esq., Surgeon to the Newcastle-on-Tyne Infirmary.

[At a meeting of the Newcastle Pathological Society.]

Mr. Greenhow, the chairman, related two cases of excision of the os calcis alone, which operation had not to his knowledge been previously performed, and which possessed an advantage over the operations of Mr. Wakley and others, inasmuch as it left the patient the free use of the ankle-joint.

The first case was that of a pitman, who was admitted into the infirmary, June 15, with an abscess discharging from the left heel, and the adjacent tissues indurated and swollen. It was stated by the patient, that eight weeks previously, a nail had accidentally been thrust into the affected part. There was likewise a distinct sense of fluctuation below the outer malleolus. The foot could be flexed on the leg without causing pain. On introducing a probe, the bone was found exposed and carious; rested ill. Ordered poultices, and twelve grains of Dover's powder every night.

For a period of two months he continued in the same state as on admission, and there being little prospect of amendment, it was determined to remove the diseased os calcis, which operation was accordingly performed on the 15th of August, in the following manner:—First, an incision was made at the internal malleolus, and carried to the centre of the heel, where it communicated with a like incision, extending from the external ankle. A third passed transversely across the sole of the foot, to join the two former. Each malleolar flap was then formed by continuing the incisions along the external and internal margins of the foot. The flaps were dissected back, the tendo Achillis divided, and the knife being introduced between the astragalus and os calcis, the bone was forcibly disarticulated and dissected out.

On the 22d, the report stated that sloughing of the flaps had occurred, with swelling and redness of the integument on the back of the leg. An abscess formed in the calf a few days afterwards, and was opened. From this period he continued to amend in every respect, the abscess having gradually closed up, the tendency to slough in the seat of operation ceased, and the wound cicatrized favourably.

The second case was also that of a pitman, aged 29, who was admitted into the hospital, August 10th, 1848, with disease of the left foot, affecting principally the os calcis, which can be felt in a carious state by a probe introduced through several fistulous apertures. The disease was stated to have commenced two years and a half previously, with spontaneous inflammation, and subsequent abscess. For this disease he was under surgical treatment in this hospital some months ago, and some portions of diseased os calcis were then removed.

On the 15th August, another portion of diseased bone was removed, the patient being under the influence of chloroform. He continued to progress favorably after the operation, up to September 3rd, by which period the incisions had nearly healed. The foot then became inflamed and tender, accompanied with œdema of the extremity as far as the knee. Considerable sympathetic fever likewise supervened.

The report of the 5th stated that the febrile symptoms had somewhat

abated, but the inflammation had extended up to the knee. On the 8th the erysipelas was principally confined to the foot, attended with œdema, and a greater lividity of the integument. An incision was made along the dorsum of the foot. From this period the inflammation gradually declined, and the wounds healed up, with the exception of several fistulous apertures on each side of the foot, through which the bone (os calcis) was felt extensively diseased.

On Oct. 17th, removal of the diseased os calcis was determined on, and the operation was accordingly performed, in a similar manner to the preceding case.

The report of Nov. 10th stated that the wounds had almost healed up, and that the deformity was not very great. In the first case the patient retains the use of the ankle-joint, and is already capable of bearing considerably on the affected limb. *Medical Gazette, Dec. 22, 1848, p. 1076.*

67.—CASE OF DISLOCATION OF THE GREAT TOE.—By Dr. W. Hargrave, Surgeon to the City of Dublin Hospital, &c.

[This was a case of dislocation of the great toe upon the dorsal aspect of its metatarsal bone, occurring in a farm labourer, æt. twenty-three. The accident happened on the 27th Nov., 1846. Reduction was attempted, but failed; in a few days the tendon of the extensor proprius, the internal tendon of the extensor brevis, and the fibrous tissues internal to the joint, were divided by tenotomy, and reduction again attempted, but in vain. An abscess in the ball of the toe followed, and left a fistulous opening through which denuded bone could be felt with the probe. Dr. Hargrave tells us]

This patient now came under the care of Dr. Williams, and on Feb. 24th he performed the following operation to remove the articular surfaces of the phalanx and metatarsal bones; prior to it the patient was submitted to the influence of ether, and continued under its agency till it was completed. An incision was then made parallel to the inner edge of the foot, met by another at right angles, carried transversely outward over the line of the articulation. On dissecting away the integuments, the phalanx was found resting upon the superior and external part of the metatarsal bone, being firmly lodged in the interval between the first and second metatarsals. The capsular ligament did not seem opened on its anterior internal aspect, but a probe, passed into the superior fistulous opening, got into the joint, which was next opened from above.

Condition of the ends of the bones:—a small portion of the cartilage of the head of the metatarsal bone, on its superior aspect, was absorbed, equal to a split pea, without the presence of pus, while that portion of the bone on which the phalanx rested was soft and carious. The articular surface of the phalanx was covered with its cartilage, and appeared healthy; the sesamoid bones were also healthy, and fixed in their natural position. The articulating surface of the phalanx was then removed with a strong-bladed scissors, next the head of the metatarsal bone, including the carious portion already noticed, which, owing to its softness, was easily excised with the same instrument. The parts were then adjusted, the wound cleansed, dressed simply, and the patient carried to his bed.

Nothing worthy of note occurred in the healing of the wound, and, on the 10th of April he was permitted to leave his bed and walk about the ward, supported by crutches, but not to bear upon the toe. On the 7th of May succeeding, he was discharged from the hospital in the following condition:—he possessed the power of *extension* and of flexion of the toe; he could bear his weight firmly on the posterior part of the foot, but did not venture on the ball of the toe.

I have had many opportunities of hearing of the progress of this very valuable case since he left the hospital, and am informed that he has com-

pletely regained the use of his foot and toe, and is fully able to perform all his duties as an active farm servant.

This luxation presents many points of analogy with that of the first phalanx of the thumb on the dorsum of its metacarpal bone. First, as to the anatomical relations, the articulating heads of the metacarpal and tarsal bones are both very large, each possessing a more or less well-formed neck; each is furnished with two well-marked and fully developed sesamoid bones, into which a number of powerful muscles are inserted. Into the sesamoids of the metasal bone, the internal one has attached to it the abductor pollicis pedis and the inner tendon of the flexor brevis pollicis pedis; the external one has, inserted into it, the external tendon of the flexor brevis, the abductor pollicis pedis, and a portion of the transversus pedis; the lateral ligaments of the articulation are strong and firm, while the capsular one is particularly so on its plantar aspect. The analogy between these two articulations is still carried out in reference to the articulating surface of the first phalanx of the toe, which presents a very superficial cavity, having but a small proportion to that of the corresponding head upon which it moves; and very strong muscles inserted into it, viz., the internal tendon of the extensor pollicis brevis, and the tendon of the extensor proprius pollicis pedis. On the inferior surface of the last phalanx the tendon of that very powerful muscle, the flexor longus, strengthened by its connexion with the flexor digitorum longus communis is inserted into it, while to the internal surface of the first phalanx the abductor pollicis pedis is attached. Taking the two bones constituting the toe, we have four muscles attached to them, three of which are very powerful,—the proper extensor of the great toe, the long flexor of the great toe, and the abductor.

What was it that opposed the reduction in this case? Nothing but muscular agency, as already indicated. A sufficient purchase was had by the hac, so carefully applied as would have enabled the phalanx to be torn from the foot, if required. By tenotomy the extensor tendons were divided, and, I would also say, the abductor pollicis pedis; still reduction could not be accomplished. As far as muscular opposition was further concerned in this luxation, we must look principally, if not solely, to the long flexor, and its connexion with the flexor longus digitorum pedis, which prevented the removal of the phalanx from the abnormal position into which it was forced by the accident. It may be asked, what would the section of the first-named tendon have effected?

One pathological fact, of great value, has been derived from this case, namely, the perfect restoration of the extensor muscles to their proper functions over the phalanges of the toes, after what may be considered a double operation,—the first being that of tenotomy,—the second, the excision of a portion of the phalanx of the toe with the head of the metatarsal bone. This reparation took place in a comparatively short period,—three months; also a healthy false articulation was formed, compensating for the natural one. *Dublin Quarterly Journal, Feb. 1849, p. 88.*

68.—ON A NEW APPARATUS FOR TREATING LATERAL CURVATURE.—By Dr. W. J. Little, Physician to the London Hospital, &c.

[Dr. Little states that he believes an eclectic plan of treatment to be preferable to any of the methods which have been exclusively recommended; and describes an apparatus invented by the Drs. Brown, of Boston, U. S., as very useful in certain cases. He says:]

The remarks offered will apply to the more frequent form of the complaint—that in which the spine in the dorsal region inclines to the right, and in the lumbar region to the left side.

The end proposed by the best designers of mechanical aid for restoration of ordinary lateral curvature has appeared to be, the application of pressure

against the convex aspects of the spinal curves, from which the *mechanical* straightening of the column has been anticipated. *Passive* consolidation of the component parts of the spinal column has been expected to result from the improved adaptation. Some practitioners, more physiological in their views, have simultaneously endeavored, by their instrumental appliances, to improve the mode of action, and the respective powers of the muscular parts of the column. Amongst the last-mentioned class, Tavernier, by the introduction of the lever-belt that bears his name, ranks, in my opinion, as one of the most successful. The plan of the Drs. Brown subserves this double object—of applying support or pressure against the convex aspects of the curves, and of exciting the muscles in a manner that will favor the restoration of their power of maintaining the equilibrium of the column, and consequently its straightness.

[The apparatus, which is termed "The Horizontal Lever-Belt," consists of a padded plate of steel, of suitable form, to press upon the projecting ribs beneath the axilla, and another plate to fit upon the ilium of the opposite side; these plates are secured in position and fastened to each other by various straps. To the iliac plate is attached, by a hinge which moves perpendicularly, a rod eighteen inches long, having a weight at its extremity, and this weighted extremity of the rod is attached by two bands of webbing to the first mentioned or *costal* plate. One of these bands passes in front of the chest, and another behind it, and the two are held widely apart by a rod passing between them, so that the chest itself is not pressed upon. The effect of this apparatus when applied, is]

To compress the spinal column at the convexities of the unnatural curves; and thus, by its mechanical action, fulfil the first indication—viz., that of endeavouring mechanically to straighten the column. It is equally apparent that the weight attached to the extremity of the lever, acting at so great a distance from the fulcrum, will incline the body to gravitate towards the left side, and by this means exercise a powerful influence in exciting the muscles upon the right side of the trunk to resist the lateral tendency, and cause it to assume the erect position. In contemplating the mode of action of the muscles, of the right ride of the trunk whilst resisting the lever, we may regard them as a continuous band, formed of the right scaleni, intercostales, and abdominal muscles. The united action of these muscles results in a pressure exercised upon the right side of the vertebral column through the intervention of the ribs. The powerful muscles occupying the right posterior groove of the back do not remain idle. The inferior portion of this mass of fibres,—that which occupies, on the right side, the concavity of the lumbar curve,—would act unfavorably for the restoration of the spine, were it not that the left side of the lumbar vertebræ is the fulcrum upon which the lever acts. These vertebræ are gradually pressed towards the right side into a more natural position; the sacro-lumbalis, which, but for this gradual rectification of the lumbar portion of the column, would, if excited to greater activity, tend to increase the deformity, now opposes no effective resistence to restoration. The excited activity of the superior portion of the muscular mass is eminently beneficial, as by its means a living pressure is maintained upon the part of the column that has most lapsed from the right line—namely, the right dorsal region. The restoration of this part is simultaneously facilitated by the pressure exercised through the intervention of the pad acting against the ribs of the right side.

The stimulus to increased activity is not confined to the muscles of the right side of the back, those of the left participating in the benefit; thus, one of the most marked results of the application of the horizontal lever is an immediate elevation of the left shoulder, a part commonly depressed in lateral curvature, (to the right side.) A decided improvement in the attitude is observable; the muscles extending from the left side of the neck to the corresponding shoulder, elevate this part; and a cessation of the inert con-

dition usually perceptible in the structures connected with, and covering the posterior surface of, the left ribs, ensues. Amongst the muscles here prompted to renewed vigour, the trapezius holds a prominent rank, and doubtless, by its situation, bulk, and corresponding power, tends to the rectification of the upper portion of the column.

[In treating lateral curvature, we should remember that it is essentially a chronic affection, and therefore, as Dr. Little observes:]

The value of the horizontal lever, as indeed of other plans of treatment of spinal curvature, cannot be duly estimated by a limited trial of its operation. Its use should be continued during months, combined with other appropriate means of treatment; and when the infirmity is not merely arrested but the progressive deterioration of the spinal column, and sometimes of the patient's health, gives place to amendment, the patient and attendant will be encouraged to perseverance. Nicety of application of the portions of which the apparatus is composed is indispensable. The pieces intended for the projecting ribs, and for the lumbar vertebræ, or pelvis, require adaptation to the varying forms of the parts in different individuals. The weight attached to the lever must be adjusted to the age and strength of the patient, and to the obvious effect upon the muscles of the back; I have found that it may vary from four ounces to two or three pounds. The cases in which the cervical and lumbar curves are either of them slight or altogether wanting,—in which the column is still flexible,—in which the deviation diminishes whilst the patient assumes the prone position,—in young subjects, in whom the growth of the frame is incomplete, and in whom the general health, although perhaps weakly, is free from any decided constitutional disease,—are those for which the horizontal lever is most suitable. These, indeed, are the cases for which any other beneficial plans of treatment advocated from the time of Andry to the present day are available.—*Lancet, Feb.* 17, 1849, *p.* 178.

69.—OPERATION FOR THE REMOVAL OF LOOSE CARTILAGES IN THE ELBOW-JOINT.—By SAMUEL SOLLY, Esq., F. R. S., Assistant Surgeon at St. Thomas's Hospital.

[Mr. Solly's patient was left after a severe attack of rheumatism, with pain and swelling of the elbow-joint. This was treated by rest, counter-irritation, iodine, and mercurials; and on the subsidence of the general swelling, there was found a small circumscribed swelling, which appeared to be a sac containing several hard and moveable bodies, situated above and behind the inner condyle. It was determined to remove these bodies by operation. Mr. Solly says:]

I made an incision about one inch in length over the swelling above the inner condyle, dividing the skin, fascia, and synovial membrane, till I exposed the loose cartilages, for such they proved to be. They were easily pressed out of the opening. I introduced my little finger into the sac, and felt the articulating surfaces of the humerus and radius, and I thought I felt an irregular surface on the ridge between the radius and ulna, like an attached portion of false cartilage, but there were no more loose bodies in the joint. Those removed were eight in number. I brought the edges of the wound into close apposition, put one suture in through the skin, and the isinglass plaister over it. I placed a pasteboard splint on the back of the joint, fixing it to the upper and fore arm, so as to prevent the slightest motion in the joint. The wound was quite healed in forty-eight hours, but I kept the joint at rest for a week; after this he was able to move it without the slightest pain—indeed, he did dot suffer in any way after the operation, except for the confinement occasioned by the splint. I have seen him repeatedly since he left the hospital, and he has remained quite well and resumed his occupation on the river.

[Mr. G. Rainey gives the following account of the mode in which these loose bodies originate. He says :]

I believe no satisfactory explanation has yet been given of the manner in which these loose bodies are formed in joints, although I think their origin, and the circumstance of their becoming loose in a joint will appear obvious, by a reference to the remarkable character of the epithelium in joints, in the theca of tendons, and in mucous bursæ. This epithelium was described by me in a paper communicated to the Royal Society by Mr. Simon about three years since, but which has not been published. A few general observations upon this structure will suffice. It is situated in those parts of a joint, theca, or bursa, where it is least exposed to pressure. It consists of loops and convolutions of capillaries of various degrees of complexity proceeding from the surrounding vessels, and projecting into the synovial cavity. These capillaries are enclosed in sacculi of basement membrane, studded with minute oval cellules: from the sacculi enclosing the capillaries, numerous other sacculi, into which no capillaries enter, proceed: these are of various forms and sizes, but generally they are attached to the primitive sacculus by an extremely long and slender filament of fibrous tissue, resembling the petiole of a leaf, the secondary sacculi being its expansion. Sometimes there are several series of these sacculi attached, one series to another, exhibiting an arborescent appearance, but in every instance the secondary sacculi are extra-vascular.

I have found this kind of secretory apparatus in all the joints, as for instance the finger joints, the knee, shoulder, &c. Now, this being the apparatus by which synovia is elaborated in all parts in which this fluid is found, and the bodies just described being found in these situations, they may be inferred to be the product of disease in these structures; the cellules of these fringes, in the place of elaborating synovia from the blood, producing, under the influence of morbid action, other products, such as cartilage, which becomes converted into imperfectly formed bone. The fact of the secondary sacculi being connected to the primary by extremely slender pedunculi, will suffice to explain the reason why these bodies may become formed in the first instance, the pedicle serving both to keep them attached, and to convey the material from the blood necessary for their development, until they acquire a certain size; but afterwards, from its tenuity, becoming no longer capable of holding them, it breaks, and the bodies become loose, and most probably cease to enlarge.

Monthly Journal, May, 1849, p. 745.

70.—CASE OF AMPUTATION AT THE ANKLE-JOINT.—By James Spence, Esq

[In this case Mr. Spence modified Syme's operation, by making the plantar flap from the above downwards, instead of raising it in the opposite direction. The disease was strumous, and occurred in a girl ten years old. Mr. Spence says:]

I employed a modification of Mr. Syme's plan of operation, suggested to me by my friend Mr. Goodsir. This modification consists in first disarticulating, and then carrying the knife downwards behind the os calcis, so as to form the plantar flap downwards from the heel from above downwards, instead of raising and dissecting that flap upwards. Chloroform having been given, I commenced in the usual manner, with an incision across the anterior aspect of the joint, from the external to the internal malleolus. The knife was then carried deeply across the plantar aspect of the heel, round from the internal to the external malleolus, where the incisions commenced. The form of the flap being thus marked out, I disarticulated by dividing first the external lateral ligament, and then carrying my knife close to the bone I divided the internal lateral ligament, and separated the soft parts on the inner side of the foot, which was now turned forwards. The

tendo Achillis was then divided, and by carrying the knife close round the back part and sides of the os calcis, that bone was readily turned out from the plantar flap. The malleoli were removed by the saw, and the operation completed in the usual manner. Two arteries only required to be secured, one towards the outer side of the plantar flap, and the anterior tibial artery. After closing the wound by interrupted suture, I dressed the stump with two long and broad strips of lint, arranged in a crucial manner, and secured by a circular slip so as to support and press the flap against the surface of the bones, and the patient was put to bed. This method I have used in several cases of amputation, and found it quite as effectual in supporting the flaps as compresses and bandages. It is more simple, and by keeping the lint slightly moist with tepid water, it can be easily removed in case of hemorrhage occurring. The subseqent treatment is thus facilitated, and much pain is saved to the patient.

On examining the foot, the soft parts around the ankle joint were found thickened and infiltrated, and sinuses from the small ulcers opened into the joint. The articular cartilages covering the lower end of the tibia, and corresponding surface of the astragalus, were affected with the brown degeneration, and extensively ulcerated. The bones were denuded, and carious at several points. A section of the os calcis, shewed its external fibrous plate reduced to a very thin shell. The interior was occupied by the soft greasy degeneration common in scrofulous bones, and contained a small portion of dead cancellated texture lying loose in the centre.

It is unnecessary to give the daily history of the case, as everything went on favourably; the incisions healed rapidly: the treatment required was principally for the old ulceration of the soft parts, which continued very intractable; it healed well for a day or two at first, and then again became sluggish; under the use of nitrate of silver, however, it began to improve more steadily.

Remarks.—The plan of operation adopted in this case, seems to have the advantage of being performed more rapidly and with less twisting and manipulation of the plantar flap, than when we dissect that flap from below upwards, as in the ordinary method. The form, position, and connexion of the flap, are the same in both methods. In other words, it seems a simpler and more easy method of producing the same result.

The great advantages of the method advocated by Mr. Syme, for amputation at the ankle, over all others hitherto proposed, consists, I think, 1st, in forming the flap from the elastic, fatty, and cutaneous tissues of the heel, parts adapted by nature to sustain pressure; and, 2d, from the lateral connexions of the flap preserving the vessles on both the internal and external sides of the ankle—thus insuring a sufficient vascular supply. Any rapidity or ease in operating, which sacrifice either of these advantages would be too dearly purchased, and most of the plans hitherto proposed, do so to some extent. Thus, for example, the plan of a large flap cut from the internal malleolar and plantar region, as proposed by M. Sédillot and others, besides sacrificing a portion of the plantar tissue, has, moreover, the great disadvantage of dividing the external lateral vascular connexions, and so, to a certain extent, endangering the vitality of the flap. For it is an anatomical fact, familiar to every one accustomed to dissect minute vascular preparations of the foot, and one which ought not to be lost sight of, that the plantar tissues of the heel which form the flap, receive at least quite as much of their arterial supply from the terminal ramifications of the external malleolar, and interosseal branches of the peroneal artery at the ankle, as from the posterior tibial above its division into the plantar arteries, and it is of importance to the vitality of the flap to preserve these sources of supply as well as that from the posterior tibial.

The plan of operation, or rather the modification of Mr. Syme's plan used in the foregoing case, preserves all the advantages of his method, whilst I certainly found it more easy and rapid of execution than when I have ope-

rated in the usual manner of dissecting the flap from below upwards, before disarticulating. *Monthly Journal, May, 1849, p. 742.*

71.—OBSERVATIONS ON NECROSIS.—By J. P. Vincent, Esq.

The film-like membrane, the periosteum in its natural state, appearing to be of low organisation,—so low in sensation, that it hardly shows signs of feeling in amputation, when the stimulus for repair is brought into full operation by subsiding all derangements into the orderly course of new functions,—is then endowed with the power of passing into one of the most exquisitely organised structures of the body. It is then highly vascular, and acutely sensitive, and fleshy in its substance. It is now abounding with life, and full of activity for the purpose for which it has passed into this state. When the surgeon is thus aided by this astonishing machinery, he is imperatively called upon to do all he can to keep up its productive energy, and he is to do nothing that can interfere with the healthful process. But how few are there who view with tenderness the quiet but effective operations that are going on! How many cases are spoiled by restless interference!

The cases of diseased bone which present at the hospital are very numerous. It is possible to assign conditions in the state of the parts that may lead to a clear distinction into classes. But, probably, necrosis is essentially an affection of the periosteum in its various changes, and in the result of those changes upon the bones. The influence which seems to me to have the greatest sway in causing periostitis, is cold and wet, when the parts over bones are exposed to these impressions.

A gentleman built for himself a large house, and constructed a bath next to his study. His delight was to bathe even in cold weather. The room was not secured from draughts; and one day, in cold weather, he sensibly felt, whilst uncovered and wet, the blast pass over his right shoulder. He suffered most acute pain in the upper part of the humerus, with general swelling of the limb, and still greater pain when the deeper parts were pressed. He soon came to his house in London, and ultimately recovered, even without the formation of abscess; but the thickening of the periosteum, which was left when the general swelling was removed, certified the nature of the attack.

An elderly lady seated herself in a garden chair after rain; afterwards she felt great pain in the seat. Some months after I saw her and found a sinus, and at the bottom a small piece of necrosed bone of the ischium.

I have been able to trace the attack very often, in the children of the peasantry, to their lying about in wet grass. The attack is always that of acute inflammation, but varying much in degree; and the constitutional symptoms are often very severe—so much so, as often to make the nature of the complaint doubtful. The course of the very acute form is to pass on to suppuration, and the pus may be formed under the periosteum, but also sometimes in the interspaces of the muscles, and of course always under the fascia.

I am not able to decide whether the very acute attack is that which terminates most readily in the healthy functions of reparation. At all events there are two states of periostitis, changing the condition of the bone in two ways: the one where the whole energy of the periosteum is called forth, where the increased action subsides into a transitional state of the membrane, so that it assumes the greatest display of formative capabilities, by which it executes, unerringly and promptly, its conservative protection to the limb.

The beauty and the efficacy of its accomplishment must strike all with admiration. This is that state which has the name of necrosis properly applied to it. The original bone is dead, and the periosteum commences its

new function of supplying an equivalent by inclosing the dead with a living case, which is to be at once a new and perfect bone, as well as an immediate substitute. The rapidity of this formation is proved by the almost sudden shifting of the attachment of the muscles. The bulky muscles of the limb, which at one moment are attached to the old bone, are at another connected with the new structure, and not the smallest interval is known to pass of their being unattached to either. The muscles suffer no moment to elapse in which they cannot move and support the limb. All their insertions remain in perfect order and integrity.

This is that state of necrosis where every provision is made for the ultimate state of perfection of the limb. The wall is quickly strong enough to sustain the weight of the body. In its construction, in order to guard against that very overcoming pain, which only one drop of matter pent up in bone produces, openings are left in the walls, and also in the integuments, for the escape of it. With the aid of such effectual powers of reparation, the sequestrum goes on to be detached. All this may require a lengthened time to be perfected. Notwithstanding the vigorous proceedings going on for the safety of the limb, injudicious surgery will often spoil the happy work that is advancing. I have often seen an operation executed which has done nothing but give the greatest pain to the devoted patient, and loss of blood produced in cutting through the periosteum. I am clear that it is quite futile to attempt any operation, except the sequestrum be quite detached; for if the least part be still connected with the living bone, this keeps up nearly as much irritation as the whole sequestrum.

But the persisting powers of reparation do not terminate in detaching the sequestrum from the living parts: they carry on the work to eject it from its case. In speaking of the cloacæ, I might have said that it would be expected that these should be found at those parts where the muscles are not attached. The same provision is observed in the skull, if matter form slowly upon the *dura mater;* in venereal necrosis especially, the bone is perforated by many openings, so that the patient suffers none of those evils that occur in accidents of this part, where the matter is more quickly deposited. In furtherance, then, of relieving the limb from the sequestrum, I have seen cases in which, when this has been quite detached and one end of it has been near an opening, at the same time that the opening has increased in size, the end of the dead bone has protruded into it, and gradually started out, and becoming ultimately completely dislodged. I have often watched a sequestrum in its advance, and been able to appreciate its daily alteration in position, so quickly has it taken place; still more, with equal rapidity the new bone has subsided into its diminished and proper size, as the sequestrum was discharged. These are beautiful examples of the powers of nature. Why, then, may not the surgeon leave some operations to her better workmanship?

These cases also prove that there is a power, beside muscular action, which can put in motion parts of the animal structure. I have very often seen, as I before said, the necrosed bone, day by day protrude with such surprising rapidity, that each day's work was quite apparent. I have seen the greater part of a tibia, which, when once started into the opening, has been quickly and completely extruded. I had a child in the hospital, not long since, about four years of age, in whom the whole femur, from the condyles to the head, came clear away. It is gratifying to see, that as the dead bone projects outwards from its case at one end, so, at the other end, the new bone at once, and rapidly, resumes the lessened bulk and form of its proper dimensions. This child, very quickly after the sequestrum was quite discharged, was able to run about the ward. There can be no doubt that there are powerful agents, which can relieve the animal structures, and expel offending bodies without the intervention of muscular motion. We have several analogies in the course of pathological observations that carry with them the truth of this principle. Even in many of the mere ex-

foliations of bone, where it is well buried in deep parts, the exfoliated portion will rise and appear at the surface of the wound. Its presence becomes the stimulus for its extrusion, just as the particle of dust from under the eyelid. It is an example of the simple stimulus for relief. In all the varieties of necrosis, the surgeon is called upon to treat with caution and reserve the case, if he weighs duly his responsibility to the patient.

Edinburgh Medical and Surgical Journal, January, 1849, *p.* 176.

72.—USE OF COLLODION IN COMPOUND FRACTURE.

The value of solution of gun-cotton was tested in a case in St. Vincent's Hospital—a compound dislocation of the ankle, with the usual fracture of the fibula. The tibia protruded through a long transverse wound at the inner ankle. The bone was easily reduced: but retraction of the divided integument kept the edges of the wound about an inch apart. After careful and gentle manipulation, aided by suitable position, Dr. O'Ferrall succeeded in bringing the posterior commissure of the wound together, and sealed it with the solution. Another point was then made to touch, and was sealed like the former. Eventually, the entire wound was thus sealed up, although synovia mixed with blood had been freely oozing before. It is now the sixth day—there is no inflammatory symptom, and the patient rests very well. The event of this case will be interesting in a practical point of view.

Medical Times, December 2, 1848, *p.* 130.

ORGANS OF CIRCULATION.

73.—ON THE TREATMENT OF WOUNDED ARTERIES.—By G. J. Guthrie, Esq., F.R.S. &c.

[Referring to the improvement introduced by Hunter in the operation for aneurism, Mr. Guthrie observes:]

The Hunterian theory may be presumed to imply:

1. That the artery is in general sound at the part in the front of the thigh now selected for operation, whilst it is usually unsound in the popliteal space behind, or in the ham, where Desault operated, and Anel recommended it to be done, and which operation is now abandoned in France, as well as in England.

2. That a ligature can be readily placed upon it in the fore part of the thigh and will usually be followed by success as far as concerns the obliteration of the artery immediately below the part on which it is applied.

3. That the limb being aneurismal, the collateral branches had begun to enlarge, so as to be better able to carry on the circulation, after the supply of blood by the main trunk has been cut off.

4. That no branches of importance are usually given off between the ligature on the artery on the fore part of the thigh and the sac of the aneurism in the ham.

5. That if such branches were ever given off, and brought the blood from their collateral communications back into the main artery below the ligature, and thence into the sac, so as to renew its pulsatory movements, they would ultimately disappear, from the impelling force not being sufficient to prevent a gradual coagulation taking place, which would soon fill up the cavity of the sac, and thus prevent its further enlargement; at which stationary point a process of removal by absorption would begin, and continue until the diseased sac, with its contents, had diminished, if not entirely disappeared, leaving only a trace behind of its former existence. The process, thus described, being frequently assisted (as I especially pointed out in my work on the Diseases of Arteries) by a commencing obliteration of the

artery immediately below the aneurism. The essential point in this theory which has immortalized the name of Hunter in surgery, depends on the integrity of the aneurismal sac, which ultimately retains, as a general rule, subject to rare exceptions, any blood which may be brought into it, either by the collateral branches from above, or from below by what may be called regurgitation, until it has become coagulated; when the sac is so filled up that no more blood can pass into it to cause its further distention, or any ulterior evil.

This theory of Mr. Hunter, then so new, so beautiful in itself, was eagerly embraced by nearly all the civilized world; and surgeons were not content with applying it to cases of diseased or aneurismal arteries, to which it is especially applicable, but they extended it indiscriminately to cases of wounded arteries, to which it is inapplicable, and in which, as I maintain, it only succeeds as a matter of accident, not of principle.

[Mr. Guthrie then proceeds to speak of the improvement which he himself introduced in the treatment of wounded arteries. He says:]

The essential features of the theory I call mine, are—

1. That the artery at the wounded part is free from previous disease, and may be expected to take on those healthy actions which, after the application of a ligature, lead to the obliteration of its canal, and the consequent suppression of hemorrhage.

2. That the circulation of the blood by the collateral branches is less free in a sound limb, than in one which has suffered during several weeks from the formation of an aneurism.

3. That this freedom of circulation is less in the *lower* than in the *upper* extremity, under all circumstances.

4. That mortification of the foot and leg, and often of the whole limb, followed by the death of the person, is a common occurrence after a ligature has been placed high up on the artery in the thigh, in consequence of a wound, whilst it is not so common an occurrence when such operation is performed in the same place for an aneurism of several weeks' duration. If the vein be also wounded, mortification is almost inevitable.

5. That mortification of the hand and arm rarely follows the application of a ligature to the artery of the *upper* extremity in any part of its course, however near the heart.

6. That when the collateral vessels are capable of carrying on the circulation through the lower extremity, the lower end of the divided artery bleeds dark or venous-coloured blood, whilst its upper end bleeds scarlet or arterial-coloured blood. In the upper extremity the colour of the blood from the lower end of the divided artery is little altered—a consequence of the greater freedom of anastomoses, or of the freer collateral circulation in the upper extremity. Facts of the greatest importance in surgery.

7. That whenever the collateral vessels are not capable of carrying on the circulation of a limb, mortification or death of the part ensues; and *that whenever this collateral circulation is sufficient to maintain the life of the limb, blood must pass into the artery below the wound, and must, as a general rule, pass up and out through the lower end of the divided artery, unless prevented by some accidental circumstance, forming an exception to the rule, but not the rule itself.*

8. That the collateral branches are capable of bringing blood into the artery above the aneurismal sac, and between it and the ligature, is admitted in the Hunterian theory, which blood the aneurismal sac receives, and usually retains. When the artery is a wounded artery, and the ligature is applied at a distance above the wound, blood is often brought into it below the ligature in a similar manner, but as there is *no aneurismal sac* to receive and retain it, the patient bleeds, perhaps to death, unless surgery comes to his assistance.

9. The presence of an aneurismal sac in one case, and its absence in the

other, is the essential difference destructive of the Hunterian theory for the treatment of aneurism being applicable to that of wounded arteries.

10. The absence of the aneurismal sac renders the application of two ligatures necessary, one on each end of a divided artery, or one above and one below the wound if the artery should not be divided, constituting the most essential feature of my theory, and the principal point to be attended to in the treatment of wounded arteries.

11. The processes for the natural suppression of hemorrhage being different in the upper and lower ends of an artery, are less capable of resistance in the lower end. This end frequently yields to the pressure of the blood regurgitating from below, and renews a bleeding which may have been suppressed for weeks, unless its closure has been rendered more permanent by the application of a ligature.

The essential parts of this theory being thus explained, I may be permitted to add that its validity has been acknowledged practically by the greater part of the surgical profession throughout Europe and America.

Lancet, Jan. 20, 1849, *p.* 55.

[The following points, Mr. Guthrie considers, were demonstrated during the French and Peninsular wars, and still remain incontrovertible.]

1. That an artery as large as the femoral is capable, when divided, of taking on certain processes, which will cause a suppression of hemorrhage from its upper end, and which suppression is usually permanent.

2. That the bleeding from the lower end of the same vessel is less certainly and less permanently restrained, and not by exactly similar processes; the blood issuing from the lower end of the femoral artery being for the first few days of a venous colour. It is less so from the axillary artery, in consequence of the collateral circulation in the upper being more free than in the lower extremity, and the change of colour is sometimes not perceptible in the smaller arteries of the forearm, although it is generally so in those of the leg.

3. That this bleeding from the lower end of the vessel, which is more or less of a venous colour, and issues in a continuous stream, may be restrained by compression properly made on, and in the course of, the lower part of the wounded artery; but that in no instance should recourse be had to a ligature on a distant part of the artery above the seat of injury, until every other possible effort to arrest the hemorrage has failed.

Lancet, March 24, 1849, *p.* 305.

When a wound occurs in the thigh, implicating the femoral artery or its branches, and the bleeding cannot be *restrained* by a moderate, but regulated compression on the trunk of the vessel, and perhaps on the injured part, recourse should be had to an operation, by which both ends of the injured artery may be secured by ligature; and the *impracticability* of doing this should be ascertained only by the failure of the attempt. If the lower end of the artery cannot be found at the time, the upper only bleeding, a gentle compression maintained upon its track may prevent mischief; but if dark-coloured blood should flow from the wound, which may be expected to come from the lower end of the artery, and compression does not suffice to suppress the hemorrhage, the bleeding end of the vessel must be exposed, and as it will be readily seen, should be secured near to its extremity.

Lancet, Feb. 3, 1849, *p.* 117.

74.—CASES OF SECONDARY HEMORRHAGE TREATED BY LIGATURE AT A DISTANCE FROM THE SEAT OF INJURY.—By G. CRITCHETT, Esq. Surgeon to the London Hospital, &c.

[The first case was that of a man aged 67, whose hand was lacerated by the bursting of a gun, so that the thumb had to be removed at the metacarpal joint. We are told that]

After the operation, the patient went on very favourably for a week; a gen-

erous diet was allowed throughout; the ligatures came away, and the wound, which was of such a nature as to preclude the possibility of union by the first intention, was covered by healthy granulations. Suddenly, on the eighth day, without any appreciable cause, arterial hemorrhage, and that, too, in a considerable stream, considering the situation of the wound, came on; pressure was tried, and succeeded in temporarily arresting the flow of blood, but in two days it again returned; styptics were now combined with pressure, but they also failed. Hemorrhage having recurred at three or four intervals, the patient's strength was reduced to a very low ebb; the house-surgeon now tied the radial artery, but this did not control the bleeding in the slighest degree. It was at this time that I was first called to see the case; bleeding was still going on, and it was evident that the vital powers were rapidly failing. On examining the wound I found a bleeding surface; it was impossible to isolate any point from which it proceeded, and even on making any attempt to seize upon any part, it broke away under the forceps. The alternative then lay between removing the hand and trying the effect of a ligature upon the brachial artery. I chose the latter. The artery was tied about the middle of the arm without difficulty, the bleeding immediately ceased, and never recurred; there was no lowering of temperature to be detected in the forearm and hand after the operation. The patient was some time in recovering his strength, but the ligature came away on the tenth day; the wounds both of the hand and the arm healed kindly, and in about two months from the time of the operation she left the hospital convalescent.

[The subject of the next case was a woman, who had received an incised wound on the inner side of the elbow, by which the median-basilic vein was divided, the fascia, and consequently the artery, being uninjured. Suppuration took place, and on the fifth day profuse arterial hemorrhage occurred, and was arrested by pressure. Again and again the bleeding recurred, and was stopped in a similar manner. On the eleventh day the wound was enlarged, and the bleeding vessel unsuccessfully sought for. Mr. Critchett says:]

Late on the evening of the same day, I had just left the hospital, in company with Mr. Hamilton, when we were called back in great haste to see this poor woman, in whom a fresh outburst of arterial blood had taken place. The house surgeon had applied a tourniquet, as a temporary measure. It was now evident that something must be done, or the patient would sink. I never saw a case in which the vital spark was more flickering. There was no pulse; the pallor was extreme; the surface cold and clammy: the white lips quivered; the eye was glazed; and it seemed as if life was ebbing fast; one more jet of arterial blood, and all must be over. At this critical moment, seeing the difficulty of finding the vessel, the diseased condition of the parts in its vicinity, and the absolute necessity of avoiding any further loss of blood, we agreed that, without removing the pressure, it was advisable to secure the humeral artery about the middle of the arm, where the parts were in a healthy condition. This operation Mr. Hamilton performed, and since that time there has been no return of hemorrhage. The ligature came away on the tenth day, and both wounds, though for some time they put on an unhealthy aspect, at length healed, and the patient left the hospital perfectly well. I need hardly say that stimuli were freely given during the progress of the cure.

[The next case was one of compound fracture of the leg, in a man, 44 years old, in which profuse arterial hemorrhage took place for the first time about a fortnight after the accident: and though arrested by cold and pressure, recurred at intervals of a few days. After the fourth attack, and when the patient was very much exhausted, Mr. Critchett was sent for; he tells us:]

Some of my senior colleagues being at hand, a consultation was held. Opinions were divided between amputation and tying the femoral artery;

my own bias being in favour of the latter proceeding, it was ultimately determined upon that the artery should be tied. I adopted this plan because I thought the man's constitutional powers good, his age favourable; the fracture, though compound, was not believed to be comminuted by those who examined it on his admission, and the general aspect of the limb was promising; and also, I felt, that whilst giving the man the chance of recovery with a useful limb, the ulterior measure of amputation was not precluded. The man was too faint to be taken from bed; he was therefore merely moved to the edge, the bed being turned round to the window. An incision about five inches in length was made on the sartorius muscle, which, being exposed, was turned aside, and the artery was readily seen in its sheath beneath it, and a ligature easily passed round it, at about the usual place. Perhaps, I may here venture, though a young surgeon, to offer a few remarks upon the subject of cutting down upon arteries. The first point to be attended to is to keep a few prominent landmarks in the mind, and not to allow the attention to be diverted from them; the next is, not to disturb the parts more than you can possibly help, so as to preserve their relative position, until the vessel is brought into view; the last and most important of all is the one that was so strongly insisted upon by Mr. Liston—viz., the cutting boldly down upon the vessel as you would do in the dead subject, and the not having recourse to directors and blunt instruments until the artery is exposed. Over-caution is far more likely to lead to embarrassment than a fair amount of boldness; a large artery has thick coats, and is not likely to be wounded by a scalpel, but is very liable to be bruised by blunt instruments, which are also very apt to confuse and obscure the parts. I have practically found these rules so useful in the few cases in which I have had an opportunity of testing them, that I venture to mention them to this society.

After the operation, the limb was enveloped in wool; there was a slight fall in the temperature of the limb, but the report on the second day after the operation is: limb warm, and feels comfortable; there has been no more hemorrhage; healthy discharge from the wound.

[About fifty days after the ligature of the artery, hemorrhage came on again, and the limb had to be amputated. Mr. Critchett makes the following remarks on these cases:]

These three cases appear to me to illustrate some interesting points of surgery, respecting which authorities are not perfectly agreed. Mr. Guthrie, in his highly practical lectures on the treatment of wounds, and injuries of arteries, puts forth as a strong argument against tying an artery at a distance from the seat of injury, the imminent danger thereby incurred of inducing sloughing of the parts.

He says, if the femoral artery be punctured near the groin, and a diffused aneurism form in a few days, can the operation of placing a ligature on the external iliac be performed on the same principle and with the same hope of success, as if the case had been one of true aneurism of several weeks or months' duration? The answer is in the negative. The Hunterian theory of aneurism is not applicable to this case. The surgeon, who placed a ligature on the external iliac under such circumstances, would probably lose his patient from mortification, because the collateral branches would not yet have had time to enlarge.

I must acknowledge I am very sceptical as to the correctness of the data upon which this reasoning is founded. I do not believe that in ordinary cases of aneurism the circulation through the sac is so far impeded or diminished as to cause enlargement of the collateral vessels, a condition of parts which Mr. Guthrie seems to think so important as affording the chief ground of hope for the vitality of the limb after the ligature has been placed on the main artery; a condition, also, which, if it really existed, would contra-indicate the operation of tying the vessel, as it would show that nature was accomplishing a cure spontaneously; but even admitting, for the sake

of argument, that the fact is correct, it does not appear to me that the inference drawn from it is quite legitimate.

In the cases I have just related, the main artery of both upper and lower extremities are tied, and not only is there is no threatening of mortification, but scarcely any appreciable diminution of temperature, and the restorative action goes on as favourably as before the operation, and as rapidly as usual. These cases, then, as far as they go, clearly tell against Mr. Guthrie's statement on this subject.

Dupuytren, Gumbaud, Samuel Cooper, Bransby Cooper, Liston, and others, have all related cases in which success has attended the tying vessels at a distance from the wounded part; but these Mr. Guthrie states were by chance and not on principle; this, of course, may also be applied to the cases I have just read, but when three instances occur in succession, in which the circulation is rapidly and completely re-established, one begins to suspect, in spite of the very high authority brought into question, that more than chance is involved here, and that nature often possesses the power of at once establishing the circulation through a limb after the main artery is tied, without the existence of an aneurism, or of any of the preliminary preparation insisted upon by Mr. Guthrie. It is far from my intention, in these remarks, to underrate the danger of mortification after tying the main artery of a limb; my object is merely to suggest that the risk of this untoward event is not greater in traumatic than in idiopathic cases. The next point is, how far the tying of an artery at a distance from the wound is justifiable as a means of arresting hemorrhage. Mr Guthrie lays it down as an unexceptionable rule, that "all wounded arteries are to be treated by ligatures of the artery at the wounded part." He says, also, in his introductory lecture, "If surgeons fly for assistance to Mr. Hunter's theory for the cure of diseased arteries they will find a method of proceeding which is never successful when put in practice for a wounded artery, or at least so seldom successful as to form only an exception to the general principle already mentioned, and which can never be departed from without imminent danger to the limb, if not to the life of the patient."

This is strong language; and in venturing the opinion that there are cases which should form an exception to this rule—such, namely, as those I have related,—I am aware that I may incur the imputation of presumption in questioning so gigantic an authority as Mr. Guthrie; but then I cannot forget that I am supported by some great names, and amongst others, by one of the first surgeons of modern times, one who "being dead, yet speaketh"—the much-to-be-lamented Liston. He states, "that cases may occur in which it is both more convenient and more scientific to apply a ligature at a distance from a wounded artery," and it appears to me that the cases I have related fully bear out this opinion. I do not for a moment deny, that immediately upon the receipt of injury, if a large vessel be wounded it is best to secure the divided ends. I do not, in fact, argue against the correctness of this principle so strongly laid down by Mr. Guthrie; it is rather against the universality of its application that I am contending. I believe that wherever the parts have become covered with granulations, so as to conceal the bleeding point, and to cause the structures to break away under the forceps and the ligature,—wherever, again, there is a sloughy and inflamed condition of the surrounding parts, so as to obscure the position of the vessel, and the patient is so enfeebled by previous loss of blood, that any additional flow may prove fatal; wherever lastly, there is a compound fracture attended with uncontrollable arterial hemorrhage, but in other respects presenting a fair prospect of recovery;—under these three several conditions of parts, any endeavour to find the wounded vessel is attended with great difficulty, and will most probably end in failure, involving the loss of the limb, and perhaps the life of the patient; and that, under all these circumstances, the easiest, the safest, the most effectual, and therefore the most scientific plan, is to pass a liga-

ture round the main artery where the parts are in a healthy and unaltered condition. (I may mention, that since I read this paper, a clinical lecture by M. Baudens has been published in the Lancet, upon this subject. He says: "In those cases where compression has been kept up unsuccessfully for so long a time that the artery has inflamed, it is advisable to apply but one ligature on the cardiac end of the vessel, but high enough to meet with healthy structures." Here then is another valuable testimony in favour of the plan I am advocating.) *Lancet, Nov.* 25, 1848, *p.* 577.

75.—ON LIGATURE OF THE SUBCLAVIAN ARTERY.—By Dr. W. Hargrave, Surgeon to the City of Dublin Hospital, &c.

[Dr. Hargrave thinks that the chief cause of failure in the operation of securing the subclavian internal to the scaleni muscles, is that the artery cannot be placed in a relaxed position after the operation. He proposes to remedy this evil by *sawing through the clavicle*. Cruveilhier and others have advocated this manœuvre as a means of facilitating the exposure of the vessel, but Dr. Hargrave recommends it with a different object. He says:—]

It is this step in the operation which I would propose, not so much for the facile exposing of the artery, but to allow it to be gently relaxed, after having been secured, the section of the clavicle would allow this to be done by permitting the approximation of the shoulder to the trunk, and so remove any strain or tension that the ligature might cause on the vessel; it would also remain more imbedded in the surrounding cellular membrane, and receive its supply of blood more freely to assist in the sanatory processes consequent on the operation; while the movements of the upper extremity would produce but little, if any, disturbing effects upon the artery.

The mode of conducting the operation I propose would be, after the vessel was exposed and encircled in the ligature, carefully to saw through the clavicle about its middle, having previously guarded the subjacent parts with a spatula. If any alterations follow this step in the relations of the artery they would be of little consequence, it being noosed prior to the section of the bone; no delay or hinderance would then prevent the tying of the artery. The action of the muscles which draw the shoulder to the trunk, as the subclavius and pectoralis minor should then be aided by position, and the arm retained *in situ* by a bandage.

Dublin Quarterly Journal, Feb. 1849, *p.* 153.

76.—ON THE USE OF LIGATURES FORMED OF ANIMAL SUBSTANCES.—By —— Wragg, Esq.

The substance which Mr. Wragg prefers is the fibrous tissue of the deer, dried, then twisted so as to form a small round thread, smooth and regular on the surface, non-elastic, sufficiently strong to resist the traction made on it by the surgeon in tying the knot. The mode of preparing these ligatures appears to the author to be a matter of great importance, and one capable of insuring or compromising the success of the operation: These tendinous slips ought to be dried slowly, and not used until all the moisture has disappeared; the author prefers those which have been dried for some years. One objection that might be raised against these ligatures of animal substances is, that they do not determine the degree of inflammation necessary for the obliteration of the artery; but this fear must yield to the testimony of all the surgeons who have found in this practice a sufficient hæmostatic remedy. This is not the reason why it has been rejected by some medical men, but rather because they doubted whether the sub-

stance of these ligatures could be effectually absorbed, and disappear amongst the tissues; the experience of Mr. Wragg fully replies to these apprehensions. During the ten years he has employed these ligatures, he has never used any others; and during this period he has tied arteries in fingers, hand, forearm, arm, leg, and thigh, and has never seen any symptoms to show that the absorption of the knot had not taken place. Some cases, chosen from a large number, will confirm the truth of these propositions: In 1836, Mr. Wragg amputated the leg of a woman above sixty years of age for a malignant ulcer; the ligatures made of the fibrous tissue of the deer were cut close to the knot, and the wound brought together; the stump was healed at the end of three weeks. No part of the ligature could be seen; no abscess, no ulceration, indicative of the threads having been on the tissues as foreign bodies.

In the case of a young man, one of the cutaneous branches of the posterior tibial artery was cut by a blow from a hatchet. Mr. Wragg tied it with one of these ligatures, which he cut close to the knot; he then brought the wound together by four points of the interrupted suture made of a thread of the same substance. Nothing further was seen of the knot of the ligature; as to the threads used for the suture, they became softened, and, from the time suppuration commenced, had a macerated appearance, their volume diminished by degrees, so that at the end of a certain time he saw, by the effect of a gradual eating away, a segment of the circumference of the thread disappear, and at last the knot gave way just as if it had been divided by scissors.

In 1839, Mr. Wragg performed an amputation at the wrist, in consequence of injuries received by a railway accident. He tied the arteries with ligatures made from the fibrous tissue of the deer. On the 12th day, suppuration being established, one of the knots became loose, and came away by the wound, but so diminished in size, and so softened, that it was with difficulty recognised; and even Mr. Wragg himself declares, that he is still in doubt whether it was not a portion of sloughing tendon.

The preceding facts indubitably prove the reality of the absorption of the ligatures formed of animal substances. The following is not less interesting, as an example of the comparative effects of this kind of ligature, and those made of vegetable threads. After amputation at the lower part of the thigh, Mr. Wragg tied the femoral artery and vein, the only vessels requiring ligature, with ligatures made from the fibrous tissue of the deer, and cut them off close to the knot; the stump was dressed, and the wound brought together with six points of suture, two being ligatures made from fibrous tissue of the deer, the other four of hemp. At the first dressing, on the fourth day, all the wound was united except at two places, where a strong portion of fascia-lata had prevented it. On the sixth day the two ligatures made from the deer came away without the necessity of being cut, whilst the four of hemp had to be cut previously to being withdrawn. The small wounds made by the ligatures of hemp were more inflamed than those made by the animal ligature.—*South Amer. Jour. of Med. and Phar.*, as quoted in *Gaz. Med. de Paris.* Nov. 18, 1848.

Monthly Retrospect, March, 1849, p. 61.

77.—ON THE SUPPRESSION OF HEMORRHAGE—By J. P. Vincent, Esq.

Mr. Vincent does not agree in the common opinion, that it is best not to disturb clots, in cases of bleeding. He says:]

The most important step in managing all cases of bleeding is, that the surgeon should be most careful to keep the bleeding vessel free from all coagulum. The smallest arteries will go on bleeding if they are covered with a clot, and many considerable hemorrhages will stop if the bleeding

points are clear from all blood; even rather large arteries will sometimes permanently cease to bleed, if kept uncovered and exposed to the air.

It is known that if a divided artery be in contact with a layer of fibrine, it has a strong affinity and aptitude to shoot into it, and it is possible that a clot of coagulum has a modified effect of this sort upon the orifice of an artery, so as to keep it from contracting and closing. It is, however, certain, that a coagulum over a bleeding artery keeps up hemorrhage. It is by this means that all styptics have generally failed, while for the most part they have only done what bare exposure will generally effect; if the blood be carefully removed, and the styptic be applied, it has the credit of supporting its character, but generally if the blood be removed and kept from forming a coagulum, the vessels will cease bleeding, as the effect of the mere exposure of the part. The doctrine explaining the use of plugs of coagulum about an artery, to restrain its bleeding, was never to me very convincing. I know practically that arteries of a considerable size, such as those about the hand, of the size even of the radial, will cease to bleed if left quite exposed, and kept freed from the formation of coagulum taking place about them; so when the socket of a tooth bleeds, if it be kept quite clear of coagulum, and the oil of turpentine be applied, it will succeed in quickly arresting the bleeding.

I have every reason to feel assured, from what I have tried in these cases, that the bleeding may be stopped in epistaxis upon these principles, by which the patient may be saved from the annoyance of what is called plugging. The plan of the proceeding that I have adopted is to keep the parts which are bleeding freed from all coagulum, and this should be done in this case by syringing the nostrils so as to wash the blood out. Now if a styptic be used, such as the sulphate of zinc, it coagulates the blood as it issues from the vessels, and so far stops the bleeding; but there is a process going on, by which this clot is loosened from its adhesion, and perhaps on the second day the bleeding is renewed. This will happen repeatedly; so that these cases have ended by being plugged. But what I contend for is, that if the syringing be carried on until the bleeding ceases, it will not only stop, but not recur. It is generally considered of importance, that the water used in cases of bleeding should be cold: but from what I have observed, arteries will contract under the use of warm water, which has a better effect in clearing away the clots, and keeping the parts clean from the blood. I have already alluded to the influence of a coagulum in keeping up bleeding, when speaking of the necessity of squeezing out the coagulum in a pile when it is opened. *Ed. Med. and Surg. Jour. Jan. 1849, p. 187*

78.—ON THE USE OF OIL OF TURPENTINE IN HEMORRHAGE—By J. P. VINCENT, Esq.

[This styptic, recommended by a Mr. Yonge of Plymouth, one hundred and seventy years since, is highly spoken of by Mr. Vincent. He says:—

Some years ago, a youth was brought to me who was passing blood in his urine. I ordered some draughts, with a few drops of oil of turpentine; the bleeding quite stopped before the end of the second day, and did not return. About a twelvemonth afterwards he was brought to me, having cut his finger but slightly; it had continued bleeding for some days; I gave him turpentine again, it stopped in a day or two. Not long after, he came a third time to me; he had a tooth extracted, and it had been bleeding for several days; the turpentine was had recourse to, and the remedy soon acted in the same sanitory way. I have several times been called in on account of hemorrhages where teeth have been extracted, and have never seen the turpentine fail in this, nor in other similar cases of hemorrhage. Not only is the administration of this medicine by the mouth so efficacious, but the local application is also powerful in stopping bleeding,

and happily so, as it anticipates the time the other method requires for effecting the purpose: at all events, it is a powerful auxiliary. The use of it is to be made with the injunction that no coagulum should be allowed to remain upon the part. I was on the point one day of leaving London for a few hours, when I was called upon to a case of bleeding from the socket from which a tooth had been extracted, and that in considerable quantity, the subject being a weakly middle-aged female. My confidence was such in the power of my means, that I left instructions to clear away the coagulum, if any, and to apply turpentine to the part, and I ordered draughts of it to be taken, and went away without waiting to see the effect. I learnt afterwards that the bleeding had soon stopped, and the medicine internally was not wanted.

Ibid, p. 186.

79.—MODE OF STOPPING BLEEDING FROM LEECH-BITES—By J. P. Vincent, Esq.

In suppressing bleeding from leech-bites, often a dangerous accident in children, he finds that the best plan is to unite a small piece of lint into a hard knot less than a pea, and wiping the orifice clear of blood, to place this little pad on the bleeding orifice, and then, taking advantage of the elasticity of the integument, to draw tightly over it a strip of adhesive plaster. This is sufficient to stop the hemorrhage, and on the third day the wound is closed.

By extending this principle, and employing a larger pad, he has succeeded in stopping the bleeding from arteries of tolerable size as the *superficialis volæ*, and the superficial palmar arch. This plan he assures the reader, presents great advantages over the usual method, both in the facility and simplicity of the application, and in the efficiency of the means, and the ease with which the wound is afterwards healed. He therefore rejects entirely the proposition of applying a ligature to the radial and ulnar arteries for suppress-hemhorrhage from arteries on the hand. *Ibid p.* 188.

80.—TO ARREST THE BLEEDING FROM LEECH-BITES.

[Dr. Tucker states that he has arrested bleeding from leech-bites by dipping some of the flocculent portion of lint in collodion, and pressing it on the orifice; and then applying collodion freely over the whole surface with a camel-hair pencil. Mr. E. Wilson advises that the compress of lint should be covered by a little disc of thin paper as soon as applied, so as to prevent it sticking to the finger or the instrument, (a pencil or pencil case), by which pressure is applied.—*Lancet, Dec.* 9, 1848, *p.* 644.

81.—ON THE USE OF MATICO AS A STYPTIC.—By J. H. Horne, Esq., London.

The vast superiority of matico as an internal therapeutic agent in active hemorrhages over all other astringents and styptics, is not sufficiently recognized by the profession, as the following case will prove:—Mr. R., about fifty years of age, residing near Uxbridge, suffered from an alarming hemorrhage, from the nose, occurring spontaneously, in October last. His medical attendant had recourse to every expedient to arrest the hemorrhage, but in vain, his life was despaired of, and a messenger was despatched to London to acquaint his brothers. One of the brothers instantly repaired to the sufferer. He employed matico, and six hours afterwards, to the surprise of the whole neighbourhood, the bleeding ceased, having continued for

days. The whole family suffer remarkably from this hemorrhagic diathesis, and it has descended to the children in the family of one of the brothers.

Nov. 7th, 1848.—I extracted by the fingers, and a pocket handkerchief, two front teeth from another brother, living at Walkern, Herts. At the time scarcely a drop of blood followed; but in the evening of the same day it began, and continued for two days and two nights, without intermission, though not in sufficient quantity either to alarm my patient, or require his sending expressly for me. A few doses of the infusion of matico would have arrested the bleeding in a very short time. Had the teeth not been very loose for upwards of two years, and almost dropping out of the mouth, I should have declined removing them, without having first administered the matico for several days, previously, which is the proper practice to adopt.

Another relative was fast sinking into the grave from disease and uterine hemorrhage, which completely baffled the ordinary remedies. On the use of the matico, the bleeding ceased, and she is now fast recovering.

Lancet, April 14, 1849, *p.* 395.

82—SUBSTITUTE FOR LEECHES.—Invented by MM. ALEXANDER & Co., Paris.

The apparatus consists essentially of two parts—an instrument for puncturing the skin, and another for promoting the flow of blood by removing atmospheric pressure from the punctured part. The puncture is effected by a lancet, the blade of which has the form of the cutting apparatus of the leech. This lancet is fixed in the mouth of a tube, and projects about the eighth of an inch beyond the edge of the tube. It may be elevated by a small lever, so that its point shall be within the tube, in which positon it is secured by a catch. Attached to the opposite end of the tube, by a piece of vulcanized India-rubber, which acts as a spring, is a piston, which is pressed down by a rod, and, on removing the pressure, is drawn back by the India-rubber spring. The piston being pressed down, the open end of the tube in which the lancet is fixed, is placed over the part to be punctured: the pressure is now removed, when the piston is drawn, back by the spring, and exhausting the air within the tube, the skin is forced up into the mouth of the tube. On loosening the lever, by which the lancet has been elevated, the latter is drawn down by a spring, also of vulcanized India-rubber, so as to effect the puncture. The cutting instrument is now removed, and a glass tube, with a piston, similar to that already described, is placed over the puncture, the air within being exhausted so that the tube adheres to the part, and the blood flows freely into it. Half a dozen or a dozen tubes, each of which would draw as much blood as a large leech, might be thus attached in two or three minutes. The apparatus, consisting of a cutting instrument and six or twelve suction tubes, together with sundry implements for cleaning the lancet and tubes after use, are contained in a small case. It is very neatly got up, and, we understand, from those who have used it, is very efficient. The idea, however, is not new; so long ago as the year 1813, the silver medal was awarded at the Society of Arts to Mr. J. Whitford, of St. Bartholomew's Hospital, for the invention of a somewhat similar apparatus for the same purpose. In Mr. Whitford's apparatus the exhaustion was effected by a syringe, which was found to be inconvenient. The use of vulcanized India-rubber springs, attached to the pistons, by which efficient suction-tubes are economically formed, is a great improvement in MM. Alexander's apparatus.—*Pharm. Journal* for Feb., 1849, p. 369.

[*London Journal of Medicine, March*, 1849, *p.* 286.

69.—TREATMENT OF VARIX.—By Dr. Hargrave.

Dr. Hargrave states that he has found the application of vulcanized India-rubber, in the form of a ring or garter, to be constantly worn on the leg, as a very efficacious method of treatment. The following cases are related corroborative of this statement:—

—— Tuit, a servant, æt. 47, admitted into the hospital November 9th, 1847; now, and for some time, of temperate habits, with an extensive varicose ulcer on the inner and anterior part of the left leg, the veins being in a very varicosed condition, with their capillaries exhibiting a great tendency to be ruptured. The veins of the right leg were also in the same condition. He was treated by means of position and the lotio nigra, attention being directed to the regular action of the bowels. For a week he had the leg bandaged, from the toes to the knee; when I cast off the bandage and substituted for it a garter, applied immediately below the knee; made of tape inch wide, into which a piece of vulcanized India-rubber was inserted.

This garter or ring was, to a certain degree, less in circumference than the leg, and was placed *in situ* by stretching it and carrying it over the foot and ankle, up the limb, to its situation a little below the knee. The man experienced the most marked comfort from this kind of bandage, so as to ask for one for the other leg. The roller was discontinued, and under the use of the garter the ulcer healed rapidly, so as to admit of his discharge with it firmly cicatrised, on the 14th of Decémber.

Mary M., æt. 40, seven months pregnant; extensive varices of both legs, with minute dark-colored capillary vessels in different parts of each leg, representing a pencilliform appearance. Each leg was also swollen. The saphena of both thighs was also varicosed, and extremely convoluted for a space equal to the palm of the hand in the centre of the limb. She also complained of considerable pain in the legs. On Saturday, May 27th, the garter was applied to the left leg. June 1st. Pain almost gone; tumid condition of the leg less; expresses herself much relieved by the use of the garter. 6th. Pain gone; tumid state of the leg much diminished; veins less, and feels herself decidedly better. Garter applied this date to the other leg. 17th. The left leg continues still well, and the fulness more diminished; the right one is also improved, but not to the same degree as the other leg.

—— Gallagher, a blacksmith, æt. 50: large varix on the inner surface of the calf of the right leg; also one forming at the anterior and inferior aspect of the tibia, to which some pain is referred. Garter applied to-day, June 1. On the 3d, some trifling œdema of the leg, as the garter was at its maximum of tightness, but no pain; that which was complained of in the anterior and inferior part of the tibia gone, and the cluster of varicose veins less. He has not applied at the hospital since the date mentioned.

—— Connor, varicose veins of the right leg, with an ulcer on the anterior part of it. June 7th. Garter applied. 21st. Second visit to the hospital; the veins better; the ulcer on the leg healed, and states that the leg is stronger. Owing to the pressure being a little too tight, a slight excoriation formed on the external part of the limb underneath the garter, which could have been prevented if he had taken but moderate care of himself, and attended the hospital for examination. A new one is being made for his use.

The simplicity and facility of application of this garter can recommend its adoption in such cases. In these instances the great benefit derived from it was the support it gave to the veins, which, if overloaded on the distal side, it was merely necessary to stretch the garter, when the *veins were instantly seen to empty themselves*. For prolonged use I think it will supersede the laced stocking and the roller, either of which, by the general compression of the limb, causes the wasting of the muscles and of the soft parts, as I have often witnessed in those individuals who have worn one or

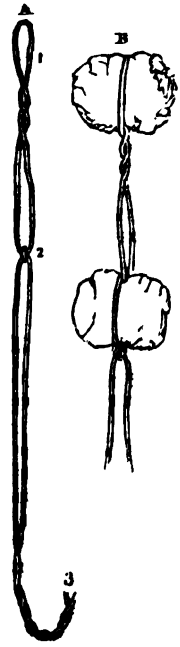
other of these bandages for a few years, and produces also a certain amount of debility. No such risk is incurred by this means of support, nor any danger to be apprehended by creasing or unequal pressure of the integuments causing fresh ulceration, if but ordinary attention is paid in wearing it. The patient is also saved from the inconvenience, which to some is of some amount, of the extreme heat of the leg caused by the laced stocking.—*Dublin Medical Press.*

Dr. Hargrave has also employed with benefit this species of elastic bandage in a case of nævus, and it might be, perhaps, advantageously used in the umbilical hernia of infancy. *Medical Gazette, Dec. 22, 1848, p. 1085.*

34.—NEW INSTRUMENT FOR PLUGGING THE NOSTRIL.—By Dr. C. Edwards Cheltenham.

[Dr. Edwards describes a simple instrument for plugging the nostrils. He says:]

The origin of the instrument was as follows:—In passing through the country, being hastily called to visit an elderly female, almost pulseless from violent and protracted epistaxis, and on former occasions having adopted the late Mr. Liston's method, I accordingly asked for a piece of wire, to convey a thread ligature from the mouth. The only wire to be



had was a piece of wire ribbon, which a woman tore from her cap. This I at first rejected, but afterwards used, and by it then, and several times since, I have been enabled to perform the following elegant and simple operation.

First.—*To construct the instrument:* Take a piece of wire ribbon, and cut out a single wire about thirty inches in length; double it, and form a space, by two or three twists, at a sufficient distance from the middle of the duplicature, when expanded, to enclose a proper plug of lint or sponge. From

the extremity of this space, at the distance of the anterior and posterior nares, say about three inches, make the first noose of a knot, and then place the ends parallel their remaining length, except at their extremities, which are to be twisted together, and then bent into a hook.

Secondly.—*To operate*: Pass the extremity which is to contain the plug along the floor of the nostrils, it will be found to project into the pharynx. At this point of the operation, by every old method, including Liston's I have often had trouble in finding the extremity of the wire or threaded probe among the clots, which difficulty has suggested the watch-spring instrument of the shops, which is not always at hand, nor, henceforth, need be. Now fasten the hook formed at the extremity of the wire, and which projects anteriorly out of the nose through the mouth, into the projecting loop in the pharynx; and, having drawn it out of the mouth, include as much lint as will suffice for a plug, securing it simply by twisting. Now retract it above the velum pendulum palati into the posterior nares, till the progress of the plug is arrested; next separate the ends hanging from the anterior nares, place a second plug between them, pressing it up to the noose previously mentioned, and securing this by a common knot, we finish the operation.

The advantages of this instrument are thus obvious—viz., the facility of obtaining its material in the poorest cottage upon an emergency; its proceeding into the pharynx quite as well as the watch-spring instrument of the shops, thus rendering the operation almost momentary; its being strong enough to pass as a probe, and sufficiently delicate to tie as a ligature. Further, the way whereby the posterior plug is secured by twisting, enables the operator to increase the size of the plug instantly, should it be found too small, and accidently be drawn through the anterior nares, which accident, were the plug secured by a knotted thread, would complicate the old, troublesome, and sometimes tedious operation.

Description.—A. Instrument ready for operation—should be about fifteen inches long; B, the same after operation, inclosing the posterior plug by torsion, the anterior by knot, the ends cut off at anterior nares; 1. Duplicature for posterior plug; 2. Noose for anterior plug; 3. Hook to draw the duplicature from pharynx. *Lancet, Feb. 3, 1849, p. 122.*

ORGANS OF RESPIRATION.

35.—ON LARYNGOTOMY AND TRACHEOTOMY IN ACUTE AFFECTIONS OF THE LARYNX.—By Prescott Hewett, Esq., Assistant Surgeon to St. George's Hospital, &c.

[Mr. Hewitt's object is to show that when we have to operate for the relief of dyspnœa arising from acute affections of the larynx, it is advisable to make the opening in the crico-thyroid region. He observes:]

Acute affections of the larynx, terminating in effusion, present, it is well known, a very great difference in the adult and in the child; the effusion, in the former, taking place by far most frequently in the sub-mucous tissue; whereas, in the latter, it is usually poured out on the free surface of the mucous membrane. In these cases, in the adult, the effusion is purely laryngeal: in the child, it is, most frequently, not only laryngeal, but also tracheal.

This marked difference in the localities of the effusion, at these two periods of life, at once points out two great divisions, in which the surgical treatment will necessarily be very different. My intention is to confine, for the present, these remarks to one of the divisions only; that of the adult period.

Effusions in the sub-mucous tissue of the larynx, it matters not of what kind, or how produced, are strictly limited to the parts above the rima glottidis. This fact, already pointed out by several pathologists, has not, I

think, been sufficiently dwelt upon by practical surgeons. That the effusion is thus invariably limited to this region, may be proved by morbid anatomy, by experiments, and by the anatomical structure of the parts. In the following cases, especial notice was paid to the limits of the disease, at the post-mortem examinations, some of which were made several years ago.

[After relating a number of post-mortem examinations, in which effusion was limited to the sub-mucous tissue of the larynx, and did not at all involve the trachea, Mr. Hewett says:]

The appearances were the same in several other post-mortem examinations, the details of which I think it quite unnecessary to give here. In all of them, whatever may have been the state of thickening above the inferior vocal cords, these cords themselves presented their well defined, sharp margins, and, in many instances, their glistening appearance, the mucous membrane covering them not being in the slightest degree affected. In none of the cases was the mucous membrane of the trachæ thickened.

That such are the precise limits of the effusion, in most cases of acute affections of the larynx at the adult age, can also be proved by some very simple experiments. If a larynx and trachea be removed and kept in water for some little time, the cellular tissue of all the parts above the inferior cords will become œdematous and swollen, whereas the parts below these cords will retain their usual appearance, the cords themselves presenting, in all cases, their well known glistening appearance. So, too, if either water or air be injected into the cellular tissue of the larynx, it will be found not to pass beyond the upper margins of the inferior cords; further than this spot, it cannot be forced downwards.

The explanation of this imitation is easily found in the anatomical structure of the larynx and trachea. Above the inferior vocal cords, the mucous membrane is connected to the subjacent parts by means of a loose cellular tissue, which is very abundant, especially in the region of the aryteno-epiglottic ligaments, whereas the connections of the mucous membrane lining these cords, and the trachea, are very firm; the cellular tissue here, being very short and very dense, forms so firm a bond of union, that it is difficult to separate the mucous membrane from the parts lying below it.

The late Mr. Liston, who was a staunch advocate for the operation of tracheotomy in most affections of the larynx, where an operation was required, admitted, in some observations published in the Lancet of 1844, "that the high operation in the crico-thyriod membrane, laryngotomy in fact, might answer in cases where there is obstruction in the rima glottidis, as where swelling has followed a scald of the glottis."

The admission thus made by Mr. Liston for these cases of accident, ought to be applied to most cases of acute laryngeal affections in the adult. After childhood, it is, comparatively speaking, very rare to find the obstruction anywhere but at the rima, or immediately above this region; it matters not whether the effusion has been preceded by an accident or not, its locality is precisely the same in both instances; it is limited in the one, as well as in the other, to the parts above the rima.

Although the effusion be above the rima, in practice it will be found, in most instances, that the obstruction for which the surgeon is called upon to operate is at the rima itself. The sudden and urgent dyspnœa, coming on in paroxysms, at once shows that this obstruction is caused by spasms of the muscles in this region. This too is proved by post-mortem examinations; for in many cases where patients have died of sudden suffocation, the effusion has been so slight as to present little or no obstruction; certainly not sufficient to account for the symptoms. It is this spasmodic state which renders the operation of laryngotomy of so much value; coming on, as it does, so suddenly and violently, it demands that the relief be immediate: the opening in the air passages must, in many instances, to be of any avail, be made, as it were, instantaneously; tracheotomy, it is well known, can-

not thus be performed with safety to the patient. A striking instance of this nature came under my notice some years back. A young woman, who was affected with extensive syphilitic ulceration of the throat, was suddenly one night attacked, no premonitory symptoms having been present, with most urgent dyspnœa; it was determined by the surgeon, who was close at hand, to perform tracheotomy; the operation was well done, but some little time was lost in making the opening in the wind-pipe, in consequence of some venous hemorrhage, and the patient, who made a slight rally after the introduction of the canula, soon died. At the post-mortem examination, the larynx was found to be quite healthy; the urgent dyspnœa had been caused solely by spasm of the glottis, induced by the irritation which was going on in its immediate neighbourhood.

Many surgeons object, I know, to this operation of laryngotomy in acute diseases about this organ; they think it desirable that the opening should be made as far as possible from the seat of the inflammation, for fear of the canula becoming the cause of extension of the disease down the trachea. Such an objection, it has, however, been shown, in the preceding observations, is not a valid one, inasmuch as the effusion in these cases does not extend beyond the loose cellular tissue of the larynx. Supposing the canula to excite some inflammation, the mucous membrane would be very slightly thickened, and an effusion of lymph might take place on its free surface; but this might be caused if the canula were placed in the trachea, just as readily as when the opening is made in the larynx. A canula placed in the larynx is not, however, likely to cause inflammation of any consequence there. This point I have particulary noticed in several post-mortem examinations. In a larynx in which a canula had been kept in the crico-thyroid region for thirty-six hours before death, there were no traces whatsoever of inflammatory action in this spot, notwithstanding that there was an abundant effusion of sero-purulent fluid above the inferior vocal cords. In another larynx, where the canula had been kept in the same region for forty-eight hours, and under similar circumstances, there were no traces of inflammation produced by the presence of the tube; neither was there any inflammatory action produced by the canula in a third case, in which it had been kept in the crico-thyroid region for several days; the mucous membrane, with the exception of the margins of the wound, not being even discoloured.

In the preceding observations, reference has been made to laryngotomy in the adult only; but there is a class of cases occurring—and that not unfrequently, among children—in which this operation is equally valuable. I refer to those cases where the little patients have swallowed either acids, or, more commonly, boiling water. Here the limits of the disease are just as well defined; the effusion following the accident, being in the sub-mucous cellular tissue, is strictly limited to the parts above the inferior chordæ vocales, and morbid anatomy shows precisely the same state of things as that which occurs most frequently in the adult; the urgent dyspnœa is in the same manner produced, in a great measure, by spasm of the glottis. In this class of cases, it may, I think, be said that laryngotomy is even more valuable than it is in the adult, owing to the much greater difficulty which naturally exists, in laying open the wind-pipe of a child.

Having thus pointed out the exact nature of the disease in these affections of the larynx, if we now proceed to weigh the respective merits of the two operations which may be resorted to, we shall find that either of them will serve for the relief of the urgent and distressing symptoms which sometimes accompany these cases. On the one hand, however, we shall have an operation, laryngotomy, which may, in most instances, be performed with great ease, and, as it were instantaneously; and, on the other hand, tracheotomy, an operation, the difficulties and dangers of which are such, that all experienced operators and practical writers have thought it advisable to dwell upon them strongly—so strongly, indeed, that it will be quite unnecessary for me to recapitulate them.

Such being the case, I shall close these observations with the two following general rules:

In adults, laryngotomy is, in cases of acute affections of the larynx, to be preferred to tracheotomy.

In children, laryngotomy is also to be preferred in cases where the obstruction has come on after swallowing boiling water, acids, or any other irritating fluid.

London Journal, Feb., 1843, p. 129.

36.—ON TRACHEOTOMY.—By Dr. Marshall Hall, F.R.S., &c.

[At p. 98 of our last Part, will be found a description of an instrument for performing tracheotomy, recommended by Dr. Hall. Dr. Hall now makes the following additional observations on the cases in which this operation is required. Speaking of the instrument, he says:]

It will be obvious that the trachea may be readily fixed by the tenaculum. The canula being then made to revolve by the thumb and finger, it descends with this revolving motion along the screw, and removes a cylindrical portion of the trachea.

In every case the first thing to be done is to make an incision of appropriate length through the integuments merely. All the other tissues down to the trachea are to be *pushed aside* without further incision, which may be done without the slightest hemorrhage. For this purpose either an eye-probe may be used, or the double-acting forceps closed. Either of these being introduced, and gently moved in different directions, the trachea is at length laid bare, and this part is *kept exposed* by applying and expanding the forceps.

At this moment, either an incision may be made into the trachea, by means of a minute scalpel, such as is used in operations on the eye, and this incision may be kept open, by means of the double-acting forceps, whilst a silver tube is introduced; or the tenaculum canula may be applied, and a portion of the trachea removed, and the tube may be inserted, or not, according to the views of the operator.

In one case, in which the operation was performed by Mr. Hilton, and the subsequent treatment was conducted by Mr. Stevens, of Great Percy-street, Loyd-square, such a tube has been worn for nineteen months, without inconvenience. The patient is a female of five-and-twenty, and probably labors under contraction of the rima glottidis, from the healing of a syphilitic ulcer.

In another case, that of a man aged sixty, suffering under chronic laryngitis, on whom Mr. Fergusson performed the operation of tracheotomy a tube has been so worn for half a year. In no part of all this operation, after the division of the integuments, will a drop of blood escape: there will be neither hemorrhage externally, nor blood drawn by the acts of inspiration into the trachea. This operation becomes almost as easy, almost as safe, as phlebotomy.

On Physical Lesion of the Larynx.—It is unnecessary for me, in this place, to do more than advert to those cases of physicial lesion of the larynx, in which tracheotomy is the remedy. My object is rather to adduce other examples, and examples of a different nature, of its utility.

On Spasmodic Laryngismus.—The next case to be mentioned here as requiring the operation of tracheotomy, is that of spasmodic closure of the glottis or larynx—or *spasmodic laryngismus*. An eminent medical professor sent for me, in haste, on account of a feeling of imminent suffocation, the effect of having inhaled, during an experiment, chlorine gas.

Every one remembers the public interest attached to the case of Mr.

Brunel. No one would hesitate, in such cases, to perform the operation of tracheotomy. In some cases of choking, too, the same necessity for this operation may exist. The specific effect of strychnine is spasmodic laryngismus. The case therefore requires tracheotomy, if time be given.

Tracheotomy has also appeared a justifiable measure in certain cases of tetanus, and in hydrophobia. But besides these cases, there are several others, in which tracheotomy would appear to be an appropriate measure.

The violence of the general convulsion in epilepsy, and in puerperal convulsion, seems to be essentially linked with closure of the larynx. Without such closure no such violent and general convulsion could take place; and without such convulsion the cerebrum could not become the seat of violent congestion; and as a further consequence, no danger to life or intellect could exist. But the epileptic coma, and especially the coma of puerperal convulsion, may prove fatal. And if there were no danger to life, the repetition of the attack of epilepsy may damage the memory, and, finally, the judgment.

Now if all this can be prevented by the operation of tracheotomy and the insertion and permanent retention of a silver tube in the wind-pipe surely the remedy is incomparably lighter than the disease, than which, indeed, nothing can be more deplorable. Besides, each epileptic attack leaves, after the first effect of exhausted excitability is over, augmented disposition to renewed attack, the effect probably of congested medulla oblongata. To obviate such havoc in the cerebrum and the medulla—to obviate the repetition of the paroxysm, and the injury to intellect, I venture to propose to the profession the adoption of tracheotomy and the tracheal air-tube.

On Paralytic Laryngismus.—The late Dr. Hugh Ley mistook the laryngismus which is so frequently observed in infants, for a paralytic affection, argued for the error in the most ingenious and elaborate manner. This affection *is* spasmodic. But there *is* a *paralytic* laryngismus, and it greatly resembles that condition produced by division of the pneumogastric nerves to which Dr. Hugh Ley adverted. Every case of *stertor* is in fact, I believe of this kind—an important generalization if correct. This stertor is usually associated with coma. It occurs after the severe epileptic, and the puerperal convulsion, in apoplexy, and as an effect of narcotic poisons. It induces *slow asphyxia.*

Now so far as this stertor and its attendant asphyxia are the source of danger, this danger may be averted by tracheotomy. This, therefore, is the final application of this important procedure, which I have to propose. In such a case of deep intoxication—it *was* employed by Dr. Sampson, as I have mentioned in my work on the "Diseases and derangement of the Nervous System," page 280, and the patient's life was saved by it—a trophy of modern surgery.

On the subsequent Treatment.—I have little to say on this subject. But I may observe that every means should be adopted to render the silver tube and the inhaled air as little irritating as possible.

With these objects, the form and bulk of the tube should be well considered, and the room of the patient should be kept at an agreeable and moderate temperature, and its air should be well supplied with moisture. These precautions are more essential immediately after the operation than more remotely. In time the parts involved become accustomed to the new stimulus, which thenceforth ceases to be a source of irritation.

It is quite possible for the operation to prove fatal, either from the mental shock or agitation, or from the presence and irritation of the tracheal tube. I have witnessed such an instance. Every device, therefore, for rendering tracheotomy more easy and safe, will doubtless be received with avidity by the profession. *Lancet, April 7, 1849, p. 368.*

87.—ON TRACHEOTOMY—By Henry Smith, Esq.

After referring to the want of success which attends the operation of tracheotomy in cases of croup, Mr. Smith refers to another class of cases in which he thinks it will be beneficial. He says:]

The disease I am speaking of is similar to that described by French authors as diphtheritis; and those cases which I have met with may with all propriety be termed laryngeal croup, as the symptoms are mostly referrible to the larynx; and, on post-mortem examination, I have found the effects of the disease to be confined to that portion of the windpipe only, the trachea being unaffected.

It is in these cases that the operation of tracheotomy would be attended with much greater success than in acute croup; for in laryngeal croup the trachea is generally perfect healthy, whilst the inflammation and consequent change of structure is confined to the larynx. I believe that this operation has been performed with success in diphtherite; but I am not aware tracheotmy is generally recommended in this disease. On turning to the latest and most excellent work on diseases of children, by Dr. West, I see that he makes no mention of opening the trachea in diphtherite, although he states the fatal symptoms are ushered in by "that urgent dyspnœa, and those violent efforts to obtain air, which attend most cases of cyananche trachealis" And, speaking of the post-mortem appearances of this affection, he says—"I have in no instance observed false membrane extending below the larynx." But although I believe that tracheotomy is more adapted to, and will be more successful in, this form of disease, than in acute croup, at the same time it should be performed at an earlier period, before the powers of the patient are already too much exhausted. I am speaking, of course of those cases where it is evident from prominent symptoms that the larynx has become affected, and that a fatal termination may be expected; for death may be looked for if there are indications that the disease has seriously implicated the larynx; and whilst the practitioner, from being averse to the use of the knife, is temporizing, and hoping to avert death by other measures, the patient will in all probability be suddenly carried off, and he will blame himself for not having resorted to a proceeding which may have had a fair chance of success.

[In support of his opinion, Mr. Smith relates the case of a child in whom laryngeal affection supervened upon measles. After death, he says:]

I requested a post-mortem examination, stating my conviction that I should find some extensive disease of the larynx, and on examining the body I found my opinion verified: there was evidence of intense inflammation having been present over the posterior part of the palate, pharynx, and larynx, and, on slitting the latter open, I found the orifice of the glottis obstructed by a tenacious secretion; and on wiping this away, the inner part of the larynx was quite changed by the disease—ulceration had extended over its inner surface and over the epiglottis the aretenoi-epiglottideian folds were destroyed, and the ventricles of the larynx were almost filled up. All below the lower segments of the ventricles was unaffected, and the trachea was healthy with the exception of some congestion.

It was with great regret that I observed these appearances after death, knowing that I had not opened the trachea. Few cases could be met with in which operation would be more likely to prove successful; and the only reasons why I did not perform it were, that the symptoms were not when I was present, sufficiently urgent to justify me in doing so, and I was averse to an operation which possibly, and probably even, might be unnecessary; but there can be little doubt from the appearances of the parts, that tracheotomy was imperatively called for, and that no other measure but that could save the child; and it becomes a serious question whether, in cases of a similar nature, and where we have good reason to believe that the larynx is involved in the surrounding mischief, the trachea is healthy and our re-

medies produce no decided effect; we should not resort to tracheotomy, without waiting for that extreme urgency of symptoms which generally alone determine the surgeon in the performance of this operation.

Medical Gazette, March 2, 1849, p. 270.

88.—CASE OF IMPACTION OF A DOG'S TOOTH IN THE LARYNX.—By Dr. T. G. GEOGHEGAN, Surgeon to the City of Dublin Hospital, &c.

[A little girl seven years of age swallowed, as she supposed, a dog's tooth, and was immediately seized with coughing and difficulty of breathing. Dr. Geoghegan saw her seven hours after the accident, and judging from the symptoms that the foreign body was in the larynx, obtained the assistance of another practitioner. Dr. G. says:]

Mr. Porter having fully coincided in the view of the case above mentioned, and in the necessity of immediate tracheotomy, I proceeded with the latter as soon as possible. At this time (ten hours and a half after the accident) the breathing had rather abruptly become much more difficult; and at the commencement of the operation, which I may remark was performed by candle-light, she was in a state of imminent suffocation; the face and lips livid; the efforts at respiration violent; the eyes staring and prominent; and froth covering the mouth. The incision occupied the usual situation, and although the neck was thin, the sterno hyoid and thyroid muscles seemed well-developed. The trachea having been seized with a hook, was opened by a rectilinear division from one-half to three-fourths of an inch in length. As no time could be spared to arrest the flow of venous blood which entered rather rapidly into the trachea, it became necessary at once to introduce the canula, and to plug the wound around it with sponge, deferring the search for the foreign body till the mouths of the vessels had been sealed by plastic effusion. The bleeding was thus easily arrested, and respiration became tranquil. Some collapse, the conjoint result of imperfect arterialization, the influence of even a small loss of blood upon a young subject, and the moderate shock of the operation, was speedily dissipated by the use of stimuli, and reaction established in three hours. In the middle of the night (the breathing at the time being rather easy), I observed a sharp clicking sound at the seat of the incision whenever the child swallowed, and on pressing the canula gently backwards, heard it distinctly strike against some hard body. Mr. Newland, licentiate of the college, who was also in attendance on the case, and present at the time, entertained the same persuasion. Considering that this must be the foreign body, I was not willing, even at some risk of recurring hemorrhage, to forego what appeared to be so favourable an opportunity of seizing it, and with this view cautiously removed the sponge. The patient at this time beginning to experience some difficulty of breathing, from the tube becoming clogged, was about to be placed on her back in order to remove the latter, when it slipped from the windwipe, and the edges of the opening in the trachea having coalesced, urgent struggling dyspnœa immediately arose, requiring the prompt divarication of the lips of the wound, during which the hemorrhage recurred; thus necessitating the replacement of the canula, and frustrating, for the time, the removal of the offending body. I should here remark, that previous to the attempt just recited, the uneasiness in the upper part of the larynx had disappeared; an additional evidence, perhaps, that the foreign body had changed its primary position. The canula could no longer be heard to strike against the hard substance, which had been probably again driven into the larynx by the violent respiratory efforts of the patient. During the rest of the night the breathing was tolerably easy, and the skin rather hot.

On the next morning, the bottom of the neck was emphysematous—a condition which gradually extended (obscuring the outline of the clavicles) to the margin of the axillæ, the affected parts yielding, when filliped by the

finger, a sound like that produced on parchment. At this period, the respiratory murmur had been for some time distinctly audible in both lungs, but less so in the left; the upper part of which evinced less clearness on percussion than the right. On applying the stethoscope, a coarse crepitus was, for the first few moments, heard, owing to the pressure of the instrument on the emphysematous cellular membrane, but afterwards no rale, except on partially closing the end of the canula, when a sonorous one was perceptible, and was also recognized by the naked ear at a little distance from the body, in the vicintity of the incision.

Since the operation, the voice, properly considered, had become of course extinct; the attempts to speak being accompanied by a sharp clicking sound of the lips, and her meaning intelligible more by observation of the motions of the latter than by the sound emitted. Subsequent to the operation, the temperature of the apartment was kept up, and steam admitted at intervals. As a prophylactic measure, and as there was some expectoration of purulent mucus, calomel, Dover's and James's powder combined, in suitable doses, were administered at intervals; some of the first named medicine having been previously given. On the next morning, thirty-six hours after the operation, as all danger of hemorrhage was past, the canula and sponge were removed, when the aperture was found to admit of easy respiration, without requiring any retraction of its edges. As, however, the margin of the opening in the trachea projected somewhat, it was removed. A search for the tooth was now instituted—first, by passing a probe into the bronchi, which procedure did not create any sign of irritation. No evidence of its presence being thus afforded, the instrument was now turned upwards to the larynx, and before it had passed more than half an inch in that direction, produced a good deal of cough, which disappeared after a little, when the manipulation could be repeated with less inconvenience.

On passing the probe to a greater height, the foreign body was distinctly perceptible by the sound elicited on striking it. Its precise situation could not, however, be determined by mediate touch. An attempt was now made to extract it with curved and straight forceps, neither of which could be brought sufficiently coincident with the axis of the windpipe to grasp the substance effectively without risking damage to the organ. A careful enlargement of the wound to a moderate extent upwards, failed to facilitate the extraction. I therefore determined, with the concurrence of Mr. Porter, to resort to a division of the cricoid cartilage, and, if necessary, of the crico-thyroid ligament. This proceeding, while free from any danger to the most important part of the larynx, offered a feasible method of removal without the risk of further delay or of inflicting with the forceps injuries which might lay the foundation of chronic and irreparable mischief sufficient to compromise either the voice or the life of the patient.

Mr. Porter had also previously made an ineffectual attempt to force the foreign body into the mouth by passing upwards a catheter, No. 9; the latter having entered the mouth without displacing it. Observing strictly the median line, to avoid as much as possible interference with the thyroid body, I divided the cricoid cartilage, and (as appeared on dissection,) a small portion of the crico-thyroid membrane. Immediately a smart jet of blood issued from the laryngeal branch of the superior thyroids. This was easily commanded by a particle of lint and the end of the finger, when, having introduced a common dress forceps, I had the satisfaction of removing the tooth.* After the operation, the breathing became perfectly tranquil.

[The patient went on very well, upon the whole, up to the night of the fifteenth day from the operation, when she was suddenly seized with difficulty of breathing, and died. Death appeared to have been caused by a

* This proved to be the molar tooth of a dog. Its extreme length (measured in a right line) three-fourths of an inch: extreme breadth three-eighths of an inch. The prominences of the crown and the point of the fang were sharp.

mass of thick and viscid mucus which occupied the bifurcation of the trachea and blocked up the tubes. Dr. Geoghegan observes:]

'The incidents of the foregoing case appear to present matters of much practical interest. Tha diagnosis exhibited but little of the difficulty occasionally experienced when the foreign body, although fixed, offers, either from its situation, size, or figure, less impediment to respiration; or where, from the intermission or cessation of the symptoms, and the paucity of the physical signs, it may be doubtful whether the offending substance has entered the air tube, or having entered, may not have been expelled and swallowed. The loud rales within the larynx, the pain referred to the latter, the difficulty of the swallowing, and the persistent nature of the symptoms, render it in the highest degree probable, that the tooth was in the first instance caught in the larynx, and becoming afterwards disengaged, glided into the trachea, where it communicated the sound heard on removing the canula after the operation, and that finally it resumed somewhat of its original position, and became impacted in the larynx under the influence of the violent respiratory struggling of the patient. If the foreign body engaged in the larynx be of such size or figure as to allow its removal through the crico-thyroid space, laryngotomy may be preferable to the opening of the trachea, and presents, in such instances, the advantages arising from more direct access to the offending substance, less troublesome amount of hemorrhage, the absence of danger from the admission of air into the veins, and probably greater facility of expelling the purulent and mucous secretions which almost invariably follow the operation. If the division of the membrane be effected by a crucial incision, sufficient space will be obtained in the adult for the extraction of most of the substances which find entrance to the organ; while, should the foreign body fall into the trachea or bronchus, it is likely to be removed by a slightly curved forceps of suitable length and slenderness of blades, with more readiness than when located in the larynx, it can be reached from the trachea. It appears to me, also, that were a case to present itself in which, from the situation, figure, or impaction of the substance in the uppermost part of the larynx, the division of the thyroid cartilage, strictly in the middle line, should seem materially to facilitate its removal, there does not exist any, *a priori*, consideration of an anatomical or physiological kind to forbid such an operation, at least in the young subject.* The extraction of a body impacted in the larynx by the forceps introduced through the ordinary tracheal opening, is a matter of considerable difficulty, where, as is not unusual, the latter lies at some depth from the surface. If the practitioner should determine on resorting to the ordinary operation of tracheotomy, as he probably must in the adult, (from the less yielding nature of the laryngeal textures,) it will be indispensable to be provided with a forceps of considerable greater curvature than those usually employed, the last one and a half or two inches, (which may be slightly bent,) should form but little more than a right angle with the remainder of the blade, the points of junction of the two portions being well rounded off. In the young subject, should any difficulty be encountered in extracting a substance impacted in the larynx, the division of the cricoid cartilage, supplementary to the operation of tracheotomy, may be effected without risk, as is shown in the foregoing case.† It appears to me also worthy of consideration, whether in the child, where the cartilages are yielding, a modification of laryngotomy might not be advantageously substituted in many instances, not only of foreign body in the larynx and trachea, but also in accidents from boiling water, and in cases of disease requiring an artificial opening. The procedure to which I allude might consist in the division of the cricoid cartilage and of the uppermost rings of the trachea, in addition to the free section of the crico-

* Professor Porter, whose opinion on any question of the surgery of the larynx is entitled to peculiar weight, informs me that he quite concurs in the latter view.

† The incision in the cartilage was found on inspection to have united.

thyroid ligament. Such an opening would afford equally ready access to the trachea or the larynx, and by the separation of its edges (aided, if necessary, by the removal of a thin slice from the edges of the cricoid and tracheal part of the incision,) sufficient room would be allowed for the extraction of most substances likely to be encountered in practice. If the incision strictly observe the median line, no danger of bleeding is encountered, except that from the laryngeal branch of the superior thyroid, which is easily arrested, the section of the isthmus of the thyroid body not affording any hemorrhage. There appears no reason, *a priori*, to doubt that any portion which might be removed from the cricoid would be replaced by new tissue, as in the instance of similar excision of a part of the tracheal rings. From the less depth of the parts from the surface, expectoration would probably be more easy, and the patient less teased by the reflex of mucus into the trachea, which is a source of much discomfort and exhaustion after tracheotomy. If the operation just described were resorted to, it might be necessary to modify the figure of the canula, should the latter be required.

The uncertain issue of cases of foreign bodies entering the air tube is strikingly illustrated by the result of the case detailed. The mass of mucus which appears to have caused death by obstructing the tracheal bifurcation was not part of the secretion of a general bronchitis, but merely a local collection produced by irritation of the lower part of the trachea and adjacent bronchi. As respiration was very shortly before death as tranquil as usual, it is probable that an inspiration following an unsuccessful effort at expectoration drew the viscid mucous mass so firmly into the opening of the bronchi as to prevent its subsequent expulsion.

Dublin Medical Press, Jan. 24, 1849, p. 49.

ALIMENTARY CANAL.

89.—ON FOREIGN BODIES IN THE MUCOUS CANALS.—By J. P. Vincent, Esq.

A portion of an ear of barley slips into the nostrils, with the stalk end foremost. The least touch of a body so formed, in such a situation, thrusts it further inward. For one or two days it produces considerable irritation, which, however, at length subsides; and the foreign body, coated with thick mucus, is ejected without effort. A small piece of leaf of a vegetable gets into the ventricle of the glottis; and causes great irritation and coughing for some hours. It is soon enveloped in mucus, and comes quietly away next day.

These facts show what the surgeon should do under similar circumstances. He should not with his forceps irritate still more parts already too much irritated. He is not to allow even any effort of sneezing, in the one case, or unnecessary hawking in the other. He is to require the patient to be kept quiet, that the body may continue in one situation, so as to acquire as soon as possible the coating which facilitates its ejection.

It has never happened to Mr. Vincent to have a case of foreign body in the trachea. But should such a case come under his management, he states that he should not think of making an opening into the trachea, providing the body moved freely up and down within the tube. He would even reverse the present practice both in this and similar cases. He would keep the patient as quiet as possible in bed or on a sofa; advising him to avoid all effort to expectorate; and he doubts not that very soon the foreign body would be ejected.

The rule seems to be on the whole not liable to objection, if the condition specified—the mobility of the body within the trachea—be kept in mind. When the body is fixed or detained in any way, it causes inflammation and ulceration of the air tubes; and sometimes the results are fatal. Yet, even when it has caused ulceration for some time, it has happened

that such a body has been at length ejected, sometimes with recovery of the patient, sometimes causing death from the injury done to the bronchi and lungs.

The practice of surgery presents to us the resources of nature of ridding parts of the presence of extraneous bodies by the means of the stimulus of relief. In cases of hemorrhage the surgeon plugs the nostrils. The efficacy of the operation depends upon the lint he uses being tightly pressed into the posterior nostrils. So it remains for a few days, and then if the surgeon withdraws it, he finds it free from all stricture; indeed, so loose, that it will perhaps discharge itself into the pharynx. The bulk of the wadding is the same as when tightly introduced; and so far from having lost any of its parts, it has acquired an addition in the thick mucus with which it is saturated. The fact is, that under the influence of the stimulus of relief, the internal nares have been quietly enlarged. A child was brought to St. Bartholomew's Hospital with a pebble in the meatus of the ear. I found it of an oblong form, and firmly wedged in. I could get the blades of a small pair of forceps to grasp it when passed over the short diameter, but I could not make it stir. Having the fear before me of doing mischief by using force, I directed the mother to bring the child in a fortnight. She did so, and I found the pebble quite loose, so that it might be removed by only a shake of the head. The body was coated with cerumen, and of course insterstitial absorption had been going on under the influence of the power of relief setting it free.

Edin. Med. and Sur. Jour., Jan., 1849; p. 171.

90.—ON THE PROPER PERIOD FOR OPERATING FOR HARELIP.

Dr. Mason Warren has recently published a paper, confirmatory of a recommendation he had formerly given, that infants should undergo this operation at as early an age as possible, he having frequently resorted to it twenty-four hours after birth, and with better success than in older children. This arises from the less resistance offered by the child, and the great rapidity of the healing process at that age enabling it to suckle almost as soon as if nothing abnormal had been present.

In *double harelip*, complicated with fissure of the bones and a projecting tubercle, he operates on one side first, and allows that to heal; for, if both sides be operated on at once the tissues are too much stretched, and suppuration occurs. If one side has united, and a month be allowed to elapse before the second operation, the protuberant intermaxillary bone will be found to have become more or less drawn into its place. Sutures are very preferable to needles, however wide the separation may be; for they can be more easily introduced, cause less irritation, and can be moved in from forty-eight to seventy-two hours, without disturbing the tender adhesions. They allow the part to be inspected, and any excess of inflammation to be kept down by wet compresses; so that after their removal, the line of adhesion is often free from redness, and, after a short time is hardly perceptible. The suture needles are most conveniently passed when straight, and sometimes by seizing them firmly with the forceps.—*American Journ. Med. Science*, No. 30, pp. 337-8.

Dr. Anselm states, that a long experience has convinced him that the practice of immediate operation, put into force by M. Bonfils, of Nancy, is the best—the child then sleeping much, wanting little nourishment, possessing only an imperfect sensibility, and offering less resistance. The longer the operation is delayed, the less perfect is the adaptation attainable, for the two segments are never developed exactly alike. The imperfect sensibility of the child is so far from favouring, as stated, the occurrence of convulsions, that these are of far more frequent occurrence in older children. The child may easily be nourished for the first three or four days with

a teaspoon, and after then it will suck with ease and safety. Much disappointment in this operation results from neglecting to divide the adhesions of the lip to the gum, without which exact coaptation cannot take place. After the operation, constant surveillance of the child by two attendants, during seventy-two hours, is requisite. Each of these, in turn, constantly maintains the parts in exact apposition, by gentle pressure of finger and thumb: for in this way alone can the consequences of the movements of the face be guarded against.—*L'Union Medicale*, No. 76.

M. Guersant observes, that there are three periods at which this operation may be performed with different chances of success. The best chance is offered when it is performed within the first fifteen days. Later, we succeed less often, owing to the indocility of the child—its crying, eating, &c., preventing also accurate union. Later still, when the child has reached from ten to fifteen years, we may reason with him, and again operate with more success.—*Gaz. des Hop.*, No. 75.

In addition to the above, we may observe that M. Paul Dubois likewise, sometime since, expressed a strong opinion in the Academie in favour of operating, in simple cases, upon very young infants. He uses very fine insect pins; and as those usually found in the shops are too long, and bend before the tissues, thus increasing the pain and duration of the operation, they should be shortened before passing. After twenty-four hours the first threads are to be replaced by others, less tightly drawn, such change being repeated daily, and much diminishing the inconvenience produced by the pins. The upper pin may be removed after the seventy-second hour, and the lower one from the eightieth to the ninety-sixth, according to the solidity of the union, which should then be found complete. The children are suckled as usual after the operation, which M. Dubois regards as important for their welfare, and preventive of cries and struggles. He has never met with hemorrhage after the operation, and he believes the best security against this is the bringing the pared surfaces into accurate contact, and the avoiding making incisions in any other part than the lip itself. The detaching from the gum the portion of lip which is nearest to the upper angle of the wound, for the purpose of rendering approximation easier, is in his opinion unnecessary, as the natural yielding character of the part allows of this being effected.—*Brit. and For. Medico-Chir. Rev.* Jan., 1849.

Mr. Bransby Cooper says:—"For my own part I agree entirely with Sir Astley Cooper in regarding it as unsafe to operate upon infants before weaning—firstly because from their excessive irritability they are totally unable to sustain any loss of blood; and secondly, because after the operation, they are rendered incapable of sucking; and, indeed, Sir Astley has pointed out in his lectures the frequency of the failures he met with in his own practice in operating upon infants shortly after birth. I consider the best time, under ordinary circumstances, to be soon after the child is weaned, as it is then capable of receiving nourishment independently of its mother, and has overcome the distress incidental to the separation from her.

"At a more advanced age, as the development of the upper jaw increases in proportion to the growth of the teeth, the deformity is very much aggravated, particularly in cases of complex hare-lip. In addition to this, children of five or six years old can offer resistance during the operation, and are also less patient under the restrictions necessary during the progress of reparation.

"The twisted suture is, I think, preferable to the interrupted; but, from what I have seen of the practice of my colleague, Mr. Cock, I am led to consider the uninterrupted suture better than either."—*Med. Gaz.* June 22, 1848.

Monthly Retrospect, April, 1849, p. 22.

91.—ON THE EVILS ATTENDING EXCISION OF THE TONSILS.—By — HARVEY, Esq.

[With respect to enlargement of the tonsils affecting the permeability of the Eustachian tube, Mr. Harvey said that]

The result of the examination of nearly a hundred cases had convinced him that the bodies in question had really nothing to do, mechanically, with obstructing that tube. After giving an anatomical description of the tonsils, he proceeded to show that when they became enlarged, it was always downwards and forwards—that is, in the direction of the mouth and of the œsophagus; and that, consequently, the effect upon the mouth of the Eustachian tube was that of dilatation, and not, as had been supposed, of occulsion, to that orifice. The author next enumerated the causes of chronic enlargement of the tonsils, the chief of which were cold, catarrhal affections, deranged digestion, the eruptive fevers, &c. Aphthoid affections were a frequent source of disease in the middle ear. With respect to occlusion of the Eustachian passage, he considered it to exist much less frequently than had been supposed; and in cases where this occlusion did exist, it was not from the enlarged tonsils pressing upon the mouth of the tube, but from thickening, the result of inflammation of the lining membrane.

Excision of the tonsils was not, therefore, expedient; indeed, in many cases which he had examined, that proceeding had been attended with enlargement of the follicles of the pharynx, continued heat and thirst, constant desire for deglutition, disturbance of the general health, and impiarment of the voice. Enlarged tonsils were more frequently found in females than males; and when enlarged in childhood, generally assumed their natural size at puberty. They appeared to the author to have some intimate sympathy with the sexual organization. The treatment of enlargement of the tonsils consisted of small doses of the bichloride of mercury and colchicum; the latter, with guaiacum, was most efficacious.

Med. Gaz., April 6, 1849, p. 606.

92.—CASE OF A FOREIGN BODY LODGED IN THE ŒSOPHAGUS.—By Dr. R. PATERSON, Physician to the Leith Dispensary, &c.

[A little girl, five or six years old, swallowed a toy composed of metal, in the shape of a saucer, which was never expelled, and for nearly four months excited no symptoms. At the end of that time, however, she was suddenly seized with an attack of croup, the symptoms of which gave way to active treatment: and on the second day from the attackit was observed that the little patient ejected with violent coughing everything she attempted to swallow. Dr. Paterson, with Dr. Coldstream, then made an examination of the throat. Dr. Paterson says:]

Dr. C. and myself having both carefully examined with the finger the state of the pharynx and upper part of œsophagus, as well as the opening of the glottis, without being able to discover anything abnormal, a tube was then passed down into the œsophagus, which entered easily, and proceeded rapidly at first, but was soon arrested by something, and on pressing it still slightly onward, air began to pass through the hollow tube. The same result followed all the attempts made by Dr. C. and myself.

The diagnosis of this case now became a little more distinct. That an opening existed between the œsophagus and trachea was most probable; but whether this was the result of simple ulceration, or arose from the pressure of the foreign body, it was impossible to determine. The only course of treatment, however, which was left to us, was that of allaying irritation and supporting the rapidly-failing strength of our little patient. With this view, nutritious enemata, with small quantities of morphia, were repeatedly administered—not a morsel of food nor a drop of fluid being ap-

parently swallowed. She continued to be nourished pretty well at first. But soon the strength began to fail. Emaciation was rapidly increasing.

She became feeble, totally exhausted, and died calmly on the 20th day of March, 1848, being twenty-six days from the occurrence of the sudden attack of croup, and nearly five months after the date at which the foreign body was accidentally swallowed.

The *post-mortem* examination revealed the true state of matters. The foreign body was found fixed in an opening between the œsophagus and trachea, about five inches down. The œsophagus was opened from behind. The *rima glottidis* and upper part of the trachea were quite healthy; but a short way down the œsophageal tube was seen the foreign body, and about a third part of it was inserted into an ulcerated fissure which communicated with the trachea. The fissure was about an inch and a-half in length, with an inflamed margin; the mucous membrane around the foreign body was all more or less inflamed; the calibre of the tube beneath was much smaller than that above the foreign body. The tin saucer lay with its cup-like cavity upwards, completely filling the calibre of the œsophagus, and so placed, that upon fluid being poured into its cavity, it at once trickled through the ulcerated opening into the trachea. The interior of the toy was encrusted, especially at the most depending part, with a white cretaceous-looking deposit, very similar in appearance to the urinary phosphatic deposit.

The post-mortem examination therefore explained, in the simplest and clearest manner, the symptoms presented by this somewhat singular case. The foreign body, when first swallowed, had obviously never passed beyond the *point* at which it was found. Its rough edges had been the means of arresting its progress downward. At first it must have been lodged in a somewhat upright position, to enable the boluses of food and the liquids drank to pass readily over its smooth convex or lower surface. The ulceration had no doubt been proceeding slowly for some time; but on its suddenly causing perforation of the trachea, the attack of croup commenced. On the occurrence of the perforation into the trachea, it is most probable that a certain change took place in the position of the foreign body. Its lower edge had slid forward into the ulcerated opening, and the body of it had fallen backwards, thus filling up completely the calibre of the œsophagus, and presenting its cup-like cavity upwards, or rather in a slanting direction.

It may be remarked, in conclusion, that two circumstances, both clearly pointed out, might have been had recourse to, with the prospect of relieving the patient and prolonging her life. *First*, A pair of œsophagus forceps might have been introduced, and the foreign body caught hold of and extracted. *Secondly*, It was a good case for the operation of œsophagotomy had the former not been practicable. In addition to both of these circumstances, I would remark, that the swallowing and progress of the foreign body was veiled in much obscurity. There was probable reason to believe, that it had been perfectly swallowed, and, although not passed by stool, it might have been lodging in the stomach or some other part of the intestinal canal.

The child was perfectly well, playful, and happy, eating and drinking with appetite, until the sudden occurrence of the croup, and which, too, came on, let it be remembered, after exposure to cold and damp. Further, even, after the flexible tube was passed into the œsophagus, it could not be determined that it came against a foreign body, but only seemed to be slightly arrested, and the air then passed through it. This was accounted for by the cup-like cavity of the foreign body having been found filled with the remnants of the food attempted to be swallowed. There was no pain externally, or swelling in any part of the neck. The foreign body, in fact, lay immediately behind the upper part of the sternum.

Ed. Med. and Surg. Jour., Jan. 1849, p. 125.

93.—ON THE OPERATION FOR HERNIA EXTERNAL TO THE SAC.—By JAMES LUKE, Esq., Surgeon to the London Hospital, &c.

[At page 164 of our Seventeenth Part will be found an abstract of a paper on this subject, read before the Royal Medical and Chirurgical Society: we here give the most interesting points of Mr. Luke's paper more at length. Mr. L. gives details of fifty-four cases of hernia, as the basis of his reasonings. He says:]

Of the fifty-four cases, the sac was opened in twenty-one, of which three died; and not opened in thirty-three, of which two died. Thus in upwards of three-fifths of the whole number Petit's operation was successfully completed. Of the cases in which the sac was opened, in ten the strangulation of the contents had continued before the operation was performed under twenty four hours, of which one died; in three, under forty-eight hours, of which one died; in eight, above forty-eight hours, of which one died. Of the unopened cases the strangulation had continued in thirteen under twenty-hours, of which none died; in twelve under forty-eight hours, of which one died; in eight, above forty-eight hours, of which one died. It should be recollected, whilst comparing these results with each other, as well as with the results of the ordinary operation in which the sac is opened extensively, that in opening the sac in cases of failure, it has not usually been divided beyond a limited extent, (varying from one quarter of an inch to one inch and a quarter), and that consequently the irritation, from exposure of the hernial contents, and from the rough and immediate handling which they too often undergo when already in a condition of high inflammation, is almost wholly avoided. For this reason it may be expected that the results of these cases of limited section of the sac will approximate to the results of Petit's operation, to which they bear a certain resemblance, and that they will bear no very unfavorable contrast to it, although its principle is not so perfectly carried out. It should not be considered that the necessity to open the sac implies either a greater degree of constriction of the hernial contents or a consequently greater severity of case from organic lesion, than in instances in which no such necessity occurs. It appears that the nature of the structure which causes the constriction, rather than the degree of constriction, however great, is the ordinary source of failure.

Thus, a stricture may be caused either by the neck of a hernial sac, or by the margins of the abdominal aperture, wholly independent of the sac. The degrees of constriction arising from these causes may be equal, and the consequent organic lesion may be in no respect different. Yet, in the former case, the surgeon will most frequently fail in his attempts, and he obliged to open the sac to enable him to return the contents into the abdomen; while in the latter, success will almost invariably attend his endeavors, unless adhesions have occurred within the sac.

Cases, as respect the hernial contents and the degree of constriction which they have suffered, may therefore be quite parallel, but differ widely in the amount of difficulty to be encountered in the performance of Petit's operation; and although failure of success involves a partial exposure of the contents, it does not necessarily imply a greater amount of danger, except that which arises from the opening itself. It is also to be expected that the results of these cases will be more favorable than the results of the ordinary operation, provided exposure and irritation are elements which generally militate against success, for these are (as already stated) almost wholly avoided.

With respect to the causes for opening the sac in these twenty-one cases, it appears that in three Petit's operation was successfully completed, but the sac was opened after the reduction of the strangulated parts into the abdomen, to remove some doubts as to their perfect liberation. The proceeding in each case, however, was ascertained to have been wholly unnecessary.

In ten the stricture was caused by the neck of the sack.

In one the stricture was at the inner ring.

In one the hernia (femoral) extended to the umbilicus and into the scrotum, the intestine being very greatly distended by flatus, and having its peritoneal tunic rent by the distension.

In two the opening was accidental.

In four the cause of the sac being opened is not stated.

When an analysis is made of the different kinds of hernia, a great disproportion is found in the amount of success attending the attempts to complete the operation; from which we may infer the difficulties that have been encountered in each respectively, and also what are probable in other cases. Amongst the fifty-four cases, there were thirty-one of femoral, twenty of inguinal, and three of umbilical hernia.

Of the thirty-one cases of femoral hernia, the sac was opened in seven, of which one died, and not opened in twenty-four, of which one died.

Of the twenty cases of inguinal hernia, the sac was opened in thirteen, of which two died; and not opened in seven, among which number there was not any death.

Of the three cases of umbilical hernia, the sac was opened in one, followed by recovery; and not opened in two, of which one died.

The foregoing statement demonstrates that the performance of Petit's operation has been by far most frequently successful in femoral, and that it has been most frequently necessary to open the sac in inguinal hernia, to effect the reduction of its contents into the abdomen. This result is quite in accordance with our expectations, and might have been anticipated from the difficulties to be encountered from the usual seat of stricture in such cases. All surgeons agree that the stricture is occasionally seated in the neck of the hernial sac, but a difference of opinion exists as to its supposed frequency. Those who deny its frequency suppose that the constriction, in many cases, is caused by the fascia which immediately invests the sac. I agree with those, however, who think that the constricting cause is most frequently seated in the neck of the sac, and results from a thickened condition of the peritoneum at that part, the breadth of which varies in different cases. Of the twenty cases of inguinal hernia enumerated, I find by my register that the seat of stricture is stated to be in the neck of the hernial sac in no less than fifteen. When so seated, it has been mostly found, not at the abdominal apertures, but a little below the external ring, the distance varying from half an inch to an inch. I have, however, seen it as much as three inches, producing the hour-glass contraction of the hernial sac. It is generally supposed, that when the stricture is produced by a thickened state of the peritoneum at the sac's neck, Petit's operation cannot be by any means successfully performed. The supposition is not wholly correct. It is true, that the difficulties of performance are very greatly increased, but they are not insurmountable. In confirmation of which assertion I find that the seven cases of inguinal hernia, in which Petit's operation was successfully completed, five are stated to have the seat of stricture in the neck of the sac. Before proceeding further, it may be advantageous to describe the mode of proceeding which I have usually adopted in such cases. The first step, before any incision is commenced, is to ascertain the exact spot at which the stricture is situated; for it must be evident that, without such information, the necessary incisions are liable to be directed to a point different from that in which they are really required. This information (as more fully stated in the Medical Gazette, vol. i., 1839–40) is attained through a general knowledge of the fact, that the stricture prevents the communication of impulse from one part of a tumour to another, beyond the stricture. Nothing more, therefore, is required in availing ourselves of that knowledge, than to press the tumour firmly between the fingers of one hand, with a view to cause impulse, while, with the fingers of the other hand at the neck of the sac, the precise point at which impulse ceases is carefully ascertained. At that point will be found the seat of stricture.

Having obtained this information, the next step is to incise the integuments so that the centre of the incision shall be directly over the stricture. a proceeding easily accomplished by causing a transverse fold to be pinched up between the fingers, and divided by transfixing it with a straight bistoury in a direction parallel with the long axis of the tumour. The various fasciæ are subsequently divided, until the neck of the hernia is fairly exposed. If this be carefully and completely done, a depression will usually be observed at the seat of the stricture, presenting a more contracted appearance at that part than at others. To the touch this contracted part feels thick, and often hard, while into it thin layers of fascia dip, which may be mistaken for the stricture itself, but which may be divided wholly independent of it, and no relief arise from the division. When these layers are turned back, the real stricture is exposed to view. In proceeding further than this point, much caution is required. The remaining object to be attained is, to incise, or rather scarify, the exposed and thickened peritoneum (which forms the stricture at the sac's neck) in one, two, or three places, without completely dividing it. By these scarifications the stricture becomes so weakened, that it is placed in a position most favourable for yielding to the pressure of the taxis, and, consequently, most favourable for its successful attainment, a circumstance which is much assisted by the removal of the support which it previously derived from the surrounding fascias in their entire state. It must be evident that, in thus dealing with a stricture so seated, it is somewhat difficult to limit the incisions, so as to avoid its complete division. Should this division happen, an opening is necessarily made into the hernial sac, and the attempt to complete Petit's operation becomes a failure. Yet the opening thus made being of small extent, there is little consequent exposure of the hernial contents. It is often sufficient, however, without further enlargement, to admit the successful application of the taxis, in which case little less than a successful attempt has been attained in the performance.

It has occasionally occurred that the strictured part has been rendered so thin and weak by the scarifications as to give way under the pressure of the taxis, even when moderate in amount, and the fluid contents of the sac have escaped by the opening, and on one occasion with a small portion of intestine. In this case the intestine was readily replaced within the sac, and afterward reduced into the abdomen by the taxis, without any consequences worthy of note.

When the stricture is caused by the margins of the external ring, the division of it is of easy accomplishment, by introducing the hernia-director beneath, and dividing it with a bistoury. On the contrary, when the stricture is at the internal ring, the division is extremely difficult, in consequence of the depth of its situation. The attempt is to be made after the same manner by the introduction of a director, and by the use of a common bistoury.

For the relief of femoral hernia, Petit's operation has been much more frequently successful than for inguinal. Thus, of thirty one cases of femoral hernia in which that operation was attempted, it was successfully performed in twenty-four, being more than three-fourths of the whole number.

The rate of mortality has been so slow in these cases, that the confidence of surgeons in the mode of operating appears fully justified.

There is great variety in the forms of femoral hernia. In the more common forms the tumour rises over Poupart's ligament, to a greater or less extent, sometimes considerably overlaying the anterior surface of the tendon of the external oblique muscle. It sometimes obscures the external inguinal ring, in which case it becomes liable to be mistaken for inguinal hernia. In other cases it rises to the spine of the ilium or even to the umbilicus; of which I have seen one example. In all such cases the femoral ring is obscured by the tumour, and there is an apparent difficulty in reach-

ing it for the purpose of dividing the stricture without opening the sac. The difficulty in most cases is not real, although it is possible that in some it may form a serious obstacle to the operator's proceedings, or even prove insurmountable.

The operation is generally one of easy performance, and may often be accomplished with a safety and a dispatch by no means commonly to be witnessed in the ordinary operations for hernia.

When the tumour thus rises over Poupart's ligament, there are not any certain means of ascertaining the precise seat of the stricture until the ligament itself is exposed by the operation. Yet it is so constantly within a very short distance of the femoral ring, that we may, for the purposes of the operation, assume the ring to be the part to which we may most advantageously direct the necessary incisions. It is, however, necessary to recollect, that it not infrequently happens that the real seat of stricture is on the thigh, to the extent of half or three-quarters of an inch below the ring. In this case it is caused by bands of fascia, which immediately invest the sac at that part; they are probably derived from the transversalis fascia, and have been described as the fascia propria of the sac.

The femoral ring being the desideratum, it becomes the question how that aperture can be most readily reached. When the tumour rises as described, an incision upon it directly over the femoral ring manifestly involves a necessity of subsequently directing the incisions to its proper part, after which they must be directed downwards, between the tumour and tendon of the external oblique muscle, to the ring. In this manner a circuit would be made, in some instances of probably more than one half of the tumour, a very great part of which would in no way assist the surgeon in the attainment of his object; but, on the contrary, would delay his proceedings, prolong the pain, and increase the dangers of the operation. It is far preferable to avoid incisions over the tumour as much as possible. This may be accomplished to a very great extent by the plan of operating which I have usually adopted in such cases.

It will be recollected that there is almost always a groove or depression of the integuments, which defines the upper limits of the tumour upon the abdominal surface. Where no depression can be seen, the boundary of the tumour may be ascertained by the pressure of the finger in that situation. A fold of integuments is to be pinched up at that part, and divided by transfixing it with a narrow knife, so that the incision, when the skin is replaced, shall fall perpendicularly to the body, with its centre opposite the depression referred to. By a few strokes of the scalpel the tendinous expansion of the abdominal muscles is to be made bare; after which a finger should be introduced as far as Poupart's ligament, between the tendinous expansion and the tumour, when the latter rises upon the former. The ligament being thus exposed, a hernia-director is guided under it by the finger into the femoral ring, the margin of which may be safely and easily divided in an upward direction with a common probed bistoury, and the taxis applied in the usual way. Should the margin of the ring have formed the stricture, the taxis for the most part succeeds very readily, and the operation is completed in a very short time. But should the stricture be caused by the bands of fascia propria referred to, the director will have passed over them as it entered the femoral ring, in which case any amount of division in an upward direction will be of no avail. When the taxis does not succeed readily, these bands of fascia may generally be suspected to be the cause of failure. The fact may be made sufficiently clear by introducing the finger upon the neck of the sac, under Poupart's ligament, while the body of the sac is pressed between the fingers and thumb of the other hand, when it will be discovered that no impulse is communicated to it by such pressure. By a little attention the bands may be detected crossing the neck of the sac from half to three-quarters of an inch below the ring, and may be divided by insinuating the nail of the fore-finger of the left hand under them from

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above, and by carrying the point of a probed bistoury along the nail, with its blunt edge towards the sac. The division is made by the surgeon drawing the bistoury away from the sac towards himself, a proceeding which, if properly performed, avoids all danger of wounding the sac or its contents. It is probable that to a want of knowledge of this frequent seat of stricture, so far below the femoral ring, caused by these bands of fascia, failure of success in the performance of Petit's operation in this kind of hernia is often to be attributed. With this knowledge I believe failure will be infrequent, unless from causes which exist within the sac, arising from changes in its contents, a circumstance by no means common in cases of recent descent.

[Mr. Luke does not speak confidently of umbilical hernia, but he is disposed to think that Petit's operation is not so well suited to this as to other forms of hernia, except when the tumour is small.]

Medico-Chirurgical Transactions, 1848, *p.* 99.

94.—ON OBSTRUCTED HERNIA.—By JOHN GAY, Esq., Surgeon to the Royal Free Hospital, &c.

[Mr. Gay, in the present paper, endeavours to define with more precision than has hitherto been done, the characters of those cases, by no means uncommon, to which the name of obstructed hernia has been applied. He begins by relating the case of a lady, the subject of umbilical hernia, who died from obstruction of the bowels; the hernial tumour being perfectly flaccid and free from tenderness. After death it was found that the intestine had suffered no constriction, but that it was adherent on one side to the mouth of the sac. Mr. Gay remarks:]

The case is one of death from an irreducible hernia without evidence that either inflammatory action or constriction had been its immediate cause; or, as Mr. Lawrence well defines it, from an interruption of the function of the protruded bowels without the presence of stricture or inflammation. The inference is, that simple irreducibility is a condition of a hernial tumour replete with danger to the ruptured person.

The circumstances which render a hernial tumour irreducible are not always the same. For the most part the bowel is retained by adhesions to the sac, either mediately or immediately; but this is not always the case, for in several cases of old umbilical hernia which have resisted the usual efforts at reduction, and therefore been considered irreducible, I have found the knuckle of intestine unadherent, but so enveloped as to be held fast by a portion of omentum, which was adherent to the sac, the presence of which had obviously prevented the due effects of the taxis from reaching the intestinal nucleus. But are unadherent intestinal herniæ equally liable to become fatal by "obstruction" as those in which adhesions to the sac exist? From my note book the following is taken:—

In the month of August, 1844, M. O., æt. sixty-three, a *very fat* woman with an enormous hernia (umbilical) was brought into the Royal Free Hospital for an erysipelatous affection of the leg. Her condition was one of extreme prostration; but from the employment of stimuli, and the application of cotton wool to the extremities, she began to recover. On the third day after her admission, however, her bowels became confined. (Opium had been administered with ammonia, on account of the pain and restlessness which constituted, beside the affection of her leg, the principal symptoms at the time of her admission). A mild cathartic was administered, but ineffectually. On the following day the abdomen became tense; she refused her food on account of a distressing sense of nausea which now set in; her pulse became quickened, 110 in the minute; the tongue brown and inclined to be dry; to which succeeded great restlessness. The abdomen was examined but, on account of her excessive obesity, without any pros-

pect of obtaining therefrom any satisfactory result. The hernial tumour *was found to be perfectly free from pain, and flaccid;* and not to have been in the least degree increased in bulk. The hernia had existed for many years; but she had used a concave tin support, kept up by means of a broad bandage of her own construction, which embraced the abdomen. A slight effort was made to reduce it; but from its apparent fixedness, and the supposition that the hernial contents were irreducible, the attempt was not persisted in.

Injections of castor oil and turpentine were given, calomel administered in doses of two grains, with three grains of the extract of colocynth every four hours, as the saline effervescent aperients were found to be objectionable from their bulk.

On the following day her condition was worse. She suffered from constant nausea; and vomiting was produced by every attempt to take either food or medicine. The abdomen was generally more distended. The hernial tumour remained, however, still flaccid and free from uneasiness; the pulse had increased to 130; the tongue had become dry, hiccup set in; in short her death, which took place on the evening of the third day, was obviously at hand.

The *post-mortem* examination disclosed a large knuckle of intestine (a portion of the ascending colon, with the last part of the cœcum) in a state of flaccidity, empty, discoloured, and readily broken up in the hernial sac. It was everywhere surrounded by omentum, the tissue of which had evidently become hypertrophied since its incarceration, which was here and there adherent to the sac, but not by very strong bands. The sac was adherent to the adjacent integuments. The mouth of the sac, which exhibited a very firm edge, was large; and from its size could not exert any constriction on the neck of the hernial mass. It was, however, apparent that although the *omentum* enjoyed some amount of freedom from some room which still existed between it and the sac, the *bowel* itself was closely confined by the omentum. The whole of the intestinal canal above the umbilical ring was distended with fluid and gaseous matters; and in some parts the small intestines exhibited patches of old, but not of recent, inflammation action. The peritoneal cavity contained some fluid; the heart was large and very flabby; the lungs emphysematous; the lining membrane of the bronchi in a state of chronic inflammation; the liver large and fatty.

This case clearly demonstrates that not only adhesions, but other causes of limitation to the function of a herniated bowel, may, *under peculiar circumstances*, be a source of fatal obstruction. Mr. Stephens made the existence of adhestons *essential* to the production of symptoms characteristic of obstructed hernia; but I think it is clear that the class thus characterised is too limited, and should be made to include cases analogous to that which has been just related. But why are herniæ allowed to become irreducible? Doubtless in most instances on account of personal inattention to them, and neglect properly to adjust the mechanical means which are used to prevent their descent. But this is not all. The doctrine, that absolute *strangulation* of herniated parts can alone justify recourse to an operation for their reduction is favourable to that view of an *irreducible* but *not strangulated* hernia, which regards it as less free from peril than is absolutely the case.

Thus a hernia becomes suddenly protruded: the surgeon is called and finds it simply incarcerated, but not in a condition to admit of the means being used for its reduction, from the protruded parts being in a state of inflammation. Remedies are successfully adopted for putting a check to the inflammatory action; but lymph has been in the meantime effused, the *materiel* of adhesions between the contents of the sac, and the sac itself, and the hernia becomes at length irreducible, and too frequently is permitted to remain so. The axiom should clearly be that a patient who has an irreducible hernia should be warned of the peril of not having it constantly and effectively supported; and that a recently incarcerated, though not strangu-

to satisfy the surgeon, it is at or near that point that the incision should be made; but if there be much doubt, it is most prudent to make the incision on the median line.

10th. That if it be found impracticable to remove the cause of the obstruction, or imprudent to make any extended search for it, relief may be obtained by forming an artificial anus as near as may be prudent to the seat of the obstruction; and that if it be, as it frequently is, near the termination of the ilium, an incision on the median line admits of its accomplishment as near as may be to the termination of that intestine.

Med. Chir. Transactions, 1848, *p.* 34.

97.—USE OF CHLOROFORM IN STRANGULATED HERNIA.

[At a meeting of the London Medical Society,]

Mr. Hancock stated that he had lately found chloroform of great service in a case of strangulated inguinal hernia. He was called lately to operate on a man suffering from a large inguinal hernia; all the usual means with the taxis had been employed without any good result. He found, on handling the tumour even in a gentle manner, that the man was put into the greatest pain. He suggested the use of chloroform. It was employed, and in less than five minutes the hernia was completely returned. He had found, however, that this agent did not succeed in a case of femoral hernia, to which he had been called, in a lady. The gut had been down for twenty-four hours, and signs of peritonitis were present. Chloroform was administered, but it took no effect. The operation was performed; the patient recovered.

Mr. Pilcher had had no personal experience in the matter, but he had heard of the successful use of chloform in several cases of hernia which had been brought to St. George's Hospital to be operated upon.

Medical Gazette, Feb. 16, 1849, *p.* 301.

98.—ON PILES.—By J. P. Vincent, Esq.

Internal piles Mr. Vincent cuts off by the knife; then he directs the injection of a solution of sulphate of iron in water, one grain to one ounce, which arrests all inconvenient bleeding. Of ligatures he disapproves, as painful and not always safe. We have known it cause fatal inflammation of the rectal veins.

In prolapse of the rectum, he recommends, as very useful and effectual, the injection of a solution of sulphate of iron; and under the employment of this remedy for one week, two weeks, or at most one month, he has seen the disease so often cured, that he is disposed to regard operation as unnecessary. *Edin. Med. and Surg. Journal*, Jan., 1849, *p.* 184.

URINARY ORGANS.

99.—ON THE OPERATION OF LITHOTRITY.—By J. Adams, Esq., Surgeon to the London Hospital, &c.

This operation is usually one of no great difficulty, and the following are the steps successively to be pursued in its performance. Having satisfied yourselves of the existence of a stone, a catheter is to be introduced, and the water remaining in the bladder is to be drawn off: this is an important step, as without it you cannot tell the quantity of water that you may with safety inject; having done this, you proceed to inject the bladder for the

purpose of unfolding its coats, and defending its mucous membrane from the contact of the lithrotrite.

The lithotrite is then to be carefully passed, and the stone felt with it: there is seldom much difficulty in this, but the difficult part of the business, namely, the seizing of the calculus, now begins. In order to accomplish this with facility, the instrument should be pressed to the back part of the bladder; the handle is to be raised, by which its curved extremity is depressed; and the lithotrite is to be carefully opened. You perceive that by this manœuvre you obtain as large a space as possible for the opening of the instrument; and at the same time, by rather forcibly depressing the end of the instrument, you naturally depress the inferior surface of the bladder, and thus, narrowing the vicus in the traverse diameter, the stone readily falls between the jaws of the lithotrite, this is at once ascertained by endeavoring to press together the two parts of the instrument. Having ascertained the seizure of the stone, you draw the instrument forwards to the centre of the bladder, and set to work with the screw and break up the stone. If the stone escape the instrument, the rectangular bed is to be depressed so as to favor the rolling of the stone towards the separated jaws of the lithotrite; sometimes a gentle shake of the lithotrite will move the stone into it. I need scarcely observe that the seizing of the stone with facility is one of the most important points in the operation. Now in reading the work of Heurteloup on the subject of lithotrity, I do not find any directions given as to the best mode of effecting this desirable end; indeed, it appears rather kept out of our view, I do not say designedly, but at any rate you are directed to adopt such and such a proceeding when you have secured the stone, but you are not directed how to do this. On reference, however, to the writings of Sir Benjamin Brodie and Mr. Key, I find ample directions to this end; and I consider it highly necessary to insist on this point, as without a due attention to it you may go fumbling with the instrument, opening it and shutting it, turning it to the right and to the left, upwards and downwards, to the great and often fatal injury to the bladder.

Having succeeded in breaking the calculus, if the patient is not suffering pain you may endeavor in the same manner to take hold of a fragment and crush it, always taking care to screw your instrument completely home; and thus three or four pieces may be broken up at the first sitting. At successive intervals of four, five, or six days or more, according to the sufferings of the patient the instrument may be again applied, so as to break up the entire stone and favor its expulsion. Do not annoy your patient by washing out his bladder, but leave it to expel its contents by the natural efforts.

In the case before us, after the operation the patient complained of a slight degree of pain on his passing water, and the water was bloody and loaded with thick tenacious mucus: entangled in the mucus there were traces of the debris of the calculus in the form of white sand. He did not pass many fragments after the first sitting: he was ordered a hip-bath night and morning. All irritation speedily subsided, and the operation was repeated at intervals, until the whole of the stone was broken up and had passed by the urethra; some of the last fragments being of very large size: they were, however, voided without any extraordinary pain.

In regard to the getting rid of the contents of the bladder, I am strongly of opinion that the less interference there is on the part of the surgeon the better. Let the patient drink freely of barley-water, and give him an alkaline mixture with tincture of hyosciamus, and you will find the bladder relieve itself much better than you can relieve it by the aid of any instruments, however ingeniously contrived. I am averse to the exhibition of opium after the operation, unless the patient should have a shivering fit, and then it may be desirable to employ it: opium has the effect occasionally of inducing retention of urine, and therefore I would not use it unnecessarily: a dose of castor oil may also be given the morn-

ing after the operation, and the hip-bath is to be employed, as in this case, night and morning. *Medical Gazette, March 9, 1849, p. 432.*

100.—HINT ON SOUNDING.—By SAMUEL SOLLY, Esq, F.R.S., &c.

When you sound for stone, use rather a short and straight instrument at first. Introduce it very slowly and cautiously, so that the point of the instrument sinks into the post-prostatic fossa, in which the stone is generally situated. If you do so, you will generally strike the stone at once: but if you sweep a sound, with a good full curve, into the bladder rapidly, you carry your instrument over the stone, and you may turn the point of it all round the bladder in vain.

Medical Gazette, Dec. 29, 1848, p. 1098.

101.—ON INCONTINENCE OF URINE AFTER LITHOTOMY.—By SAMUEL SOLLY Esq., F.R.S., &c.

[In a clinical lecture upon urinary diseases, Mr. Solly, speaking of incontinence of urine after lithotomy, observed:]

For this symptom which is not a common consequence of lithotomy in the male, I have prescribed the extractum nucis vomicæ, having found it very useful in cases of incontinence from other causes. Many of you will, I think, remember a case that I had in Lazarus Ward, about six months ago, where the patient, about twenty years of age, wetted his bed every night. This man got perfectly well under this medicine. I had a similar case in private practice just about the same time equally successful. I give very small doses at first, gradually increasing them. Kain took the 8th of a grain three times a day; he is now taking a grain, and he is improving, though slowly. He can retain his water much better than he could a week ago.

Medical Gazette, Feb. 2, 1849, p. 181.

102.—ON THE CAUSES OF DEATH AFTER LITHOTOMY—By BARNEY COOPER, Esq., F.R.S., &c.

In the post-mortem examination of patients who have died from the operation for stone, the immediate cause of death is usually not very apparent, but a general diffused subacute inflammation of the peritoneum presents itself, with more or less effusion of flocculi of non-plastic matter, resembling very much the appearance in death from puerperal fever. Not unfrequently a sloughing of the cellular membrane is found passing from the prostate upwards, between the bladder and rectum, filled with a sanious effusion, and resulting from the facia of the prostate having been cut through, and allowing of the extravasation of urine, and this is by far the most frequent cause of a fatal result in the operation for stone. A general diffused subacute inflammation is also found over the surface of the peritoneum, attended by an effusion of nonplastic matter, sufficient to produce a feeble adhesion of the folds of the intestines to each other, but being very different from that adhesion caused by acute inflammation. Hiccup and sickness, which are so frequently attendant upon this condition, indicate the extension of the inflammation to the peritoneal coverings of the stomach and diaphragm, and must be always regarded as a very dangerous symptom. The mucous membrane of the bladder is frequently found highly vascular, or its vessels replete with coagulated blood, giving the appearance of ecchymosis: sometimes it is also found ulcerated. The muscular coat is generally thickened, so as to encroach upon the cavity of

the bladder and diminish its capacity, which may be a cause of the contractions of the bladder around calculi, to which I have already alluded. The ureters are not unfrequently found much dilated; and I have met with a case, in the examination of a gentleman who had died from stone, in whom the left ureter was impervious at its termination in the bladder, but was extremely dilated from that point up to the kidney, and a large diverticulum, of two inches in length, filled with urine, had formed in the ureter, just above its termination in the bladder. The kidneys are frequently the subject of disease in cases of stone: they may be either distended with calcareous matter or with urine, to an extent which may have led to the interstitial absorption of the whole of their secreting structure, or, as sometimes happens, they will be found much wasted: but such extensive disorganization must have been indicated during life, and would have precluded the performance of the operation. *Med. Gaz., Feb.* 2, 1849, *p.* 178.

183.—HINT ON THE DIET AFTER LITHOTOMY.—By Brandby Cooper, Esq., F.R.S, &c.

Patients should not be kept on spare diet after the operation of lithotomy, nor, indeed, after any severe ordeal of the kind. It should always be remembered that you cannot diminish constitutional power without increasing irritability; and that, consequently, support is generally requisite, and should be early prescribed.

I am sure that one of the greatest modern improvements in the treatment of patients who have undergone surgical operations is with respect to the better diet that is early advised: and hence. I believe, arises the greater comparative success of operations in this than in any other country. *Med. Gaz. Jan.* 19, 1849, *p.* 86.

184.—ON THE OPERATION OF PHYMOSIS.—By W. Colles Esq., Surgeon to Steven's Hospital, Dublin, &c.

[After alluding to the various operations for phymosis, all of which are in his opinion more or less objectionable, Mr. Colles says:]

I have been in the habit, for some time, of removing the deformity by a simple and very effectual operation. I seize the edge of the prepuce, at its fold forming the narrow band, in the left hand, and holding the scalpel in the right, and at right angles with the penis, I remove a circular portion of skin, about a quarter of an inch wide. The outer fold of skin, being loose, is then drawn back on the penis, leaving the glans covered by the inner and tighter fold. I then divide this layer about half way back, more or less, slitting it up exactly in the centre, by passing a sharp-pointed bistoury under it. We have now the outer fold of skin loose, with a large circular orifice; the inner, or more contracted portion, presenting also an orifice, but larger by double the perpendicular incision, which forms two angular flaps. I then turn these flaps outwards, and by a suture attach each angle to the edge of the external skin, at about a quarter of its circumference from the frænum; a slight suture at the frænum completes the operation. I then draw all forward so as to cover the glans. In two or three days I remove the sutures, and generally find the wound healed, leaving a covering for the glans, differing in no respect from the natural and perfect prepuce; and in some cases it would be difficult to know that any operation had been performed, or that any had been required, on this part. *Dublin Quarterly Journal, Feb.*, 1849, *p.* 250.

105.—ON THE TREATMENT OF ORCHITIS.—By BRANSBY COOPER, Esq., F.R.S., &c.

[After stating that in persons of a full plethoric habit, blood should be taken from the arm, and that in other cases leeching should be employed, Mr. Cooper says:]

In my own practice I always recommend cupping on the loins in addition to the leeches, taking ℥viij. of blood; and I have found, by experience, that the pain is relieved with much more certainty by this plan than when leeches alone are employed; I also generally employ the following as internal remedies:—

℞. Hydrarg. chloridi, gr. iss.; pulv. antim. potassio-tartratis, g. ½; pulv. opii. gr. ½. M. Ft. pilul. statim sumenda.

℞. Magnes. sulph. ℥iij.; liq. ammon. acet. ℥j; liq. antim. potassio-tartrat. ℥iss.; træ. hyoscy. ℥iss; aq. menth. virid. ℥vij. M. capt. cochl. larga. ij. quaque tertia hora donec alvus bene responderit.

As a local application, I have also found the following lotion beneficial:—

℞. Ammon. hydrochlor. ℥iss; sp. vini. rect., liq. amm. acet. aa. ℥ij.; aquæ destil. ℥iv. M. Ft. lotio sæpe applicand.

If the inflammation be not subdued by these means, and the vessels of the scrotum appear to be congested, they must be opened with a lancet, and copious bleeding promoted by warm fomentations; the patient should be kept in a recumbent position, and made to abstain entirely from animal food.

[If the affection of the testis arises from metastasis from the urethra in gonorrhœal inflammation, we must apply warm fomentation to the scrotum, perineum, and penis, in order to re-establish the discharge, and when this is done, calomel and opium given every night is stated by Mr. Cooper to be the best means of preventing a return of the disease. As to rheumatic orchitis, Mr. Cooper observes:]

Persons who are subject to rheumatism appear to be especially predisposed to a peculiar description of orchitis which seems to attack the tunica albuginea: this form of the disease may be diagnosed by its commencing without any apparent exciting cause, if we except the rheumatic tendency of the patient; the disease generally yields without difficulty to the administration of alkalies and a small dose of colchicum at bed time. Individuals of gouty diathesis are also liable to a somewhat similar affection. I had a gentleman, a martyr to gout, for many years under my care, in whose case the attacks were frequently preceded by discharge from the urethra and swelling of the testicle, without his having subjected himself to the possibility of venereal infection.

It sometimes happens that after acute orchitis (whatever its origin may be) has been subdued, enlargement and hardening of the testicle still remains, unattended, however, by pain or uneasiness: the swelling is best reduced by the application of the following ointment:—

℞. Ung hydrarg.; cerat. saponis, aa. ℥ij.; camphoræ, gr. v. M. ft. unguentum.

The ointment should be spread upon lint, strips of which should be laid smoothly over the swelling, and these confined by adhesive plaster applied so as to maintain considerable pressure upon the parts. Some practitioners have recommended pressure as the most effectual means of subduing the swelling from acute inflammation in its early stages, but I do not much advocate such practice, excepting as a secondary mode of treatment.

Medical Gaz., March 2, 1849, p. 266.

106.—ON THE TREATMENT OF HYDROCELE.—By BRANSBY COOPER, Esq., F. R. S., &c.

[In young children, the cure of simple hydrocele, if not spontaneously

produced, may generally be effected by local applications; and I have frequently produced absorption of the fluid by the use of the following lotion:—

℞. Amm. hydrochlor. ʒj.; liq. am. acet sp. vini. re ct. aa. ℥ij.; aquæ destil. ℥iv. M. Ft. lotio sæpe applicand.

Should this treatment not succeed, acupuncturation is almost infallible in children. In later periods of life, hydrocele sometimes undergoes a spontaneous cure, from a blow or any cause which induces inflammation, or from a rupture of the tunic attended by diffusion of the fluid; and I *think* I have also known it to result from an altered action being established without the tunica vaginalis being torn.

[Speaking of the various operations which have been recommended for the radical cure of hydrocele in the adult, M. Cooper observes:]

Incision was the operation employed by John Hunter: it was performed in the following manner:—He made an incision into the tunica vaginalis, allowing the fluid to escape, and then, sprinkling flour on the surface of the tunic to excite inflammation, the membranous sac filled up by granulation. This operation, however, so frequently led to sloughing, that Mr. Pott repudiated it, and substituted that of injection, which is now almost always employed. In those cases, however, in which there is a great difficulty in forming a diagnosis, incision is a most safe mode of proceeding, provided no further means be employed to produce inflammation of the tunica vaginalis. In June, 1839, I admitted a patient, aged sixty-four, into Stephen's Ward, Guy's Hospital, who was the subject of a large scrotal tumor, which had formed so rapidly, that I doubted whether it was hydrocele or hæmatocele; this doubt was strengthened by the perfect opacity of the tumor, and I proceeded therefore to open the tunic by way of exploration: a pint of brownish serum was evacuated, and I found the tunica vaginalis extremely thickened, in some parts cartilaginous, and at its upper portion ossified: the patient was, however, perfectly cured by this simple operation. My colleague, Mr. Cock, also treated a similar case by incision, but in that instance the whole cartilaginous tunic was thrown off by a sloughing process; but the patient also recovered. I have myself had several cases in which I have adopted simple incision as the mode of treatment.

[Mr. Cooper does not, however, approve of this operation, except in such cases as offer a difficulty in ascertaining the precise nature of the disease. The operations by excision, caustic, and seton, he decidedly condemns.)

Medical Gazette, March 2, 1849, p. 358.

☞ [Mr. Cooper now always uses the iodine injection in the radical cure of hydrocele, as he finds that its use is invariably successful, and is free from all the ill effects which frequently followed the employment of the solution of zinc, or wine and water. He says:]

One circumstance has struck me as very singular in the use of this injection; it is, that it frequently produces so little pain that I have, in some cases, considered failure as almost certain, and yet, without either swelling or pain, the cure has been completely effected. I subjoin one or two cases in illustration of this fact. The Rev. Mr. H., of Norfolk, had had hydrocele on both sides for six years; two years ago he had the fluid drawn from off both hydroceles, and had the right side injected with wine and water, but ineffectually: a year and a half after he had the same side injected with solution of zinc, and was cured. The left hydrocele then became troublesome, and he submitted to the injection of wine and water, which proved unsuccessful. He then had recourse to a second operation on the left side, when the surgeon employed the zinc, which had previously succeeded with the right side, but on this trial it also failed. He consulted me in February, 1839, when I injected the tincture of iodine in the proportions already de-

scribed, and the disease was perfectly cured with little apparent inflammation or pain.

In July, 1840, I injected a hydrocele for a patient of Mr. McCann, of Parliament Street, with the iodine injection, in this case also with complete success, although the patient suffered no pain either upon the injection of the fluid or subsequently. An Irish peer came to my house and requested me to draw off the water from his hydrocele. I proposed to attempt the radical cure, to which he replied, "your uncle and three other surgeons have already injected the hydrocele ineffectually, and therefore I do not wish to submit to any further attempt." I stated to him the effect of the new injection, and then with his consent threw in half a drachm of compound tincture of iodine with a drachm and a half of water. The injection produced no pain. His lordship called upon me a week after, and laughed at my remedy, but from that moment, although the circumstance occurred four years ago, he has not had a return of the disease.

The mode in which the cure is effected in all cases of injection, is, I believe, by altering the action of the capillaries of the tunica vaginalis, and not by the effusion of plastic matter, producing the adhesion of the sides of the tunic; for in many preparations of the tunica vaginalis, after successful injection for hydrocele, no such adhesions are found. It sometimes happens that partial adhesions are formed, dividing the tunic into two or more sacs, and in such cases it has occurred that these sacs have secreted fluid, and the hydrocele has put on a complex form, being divided in distinct chambers, as it were, each of which must be opened for the evacuation of its fluid. In tapping a patient for hydrocele, at Guy's Hospital, I found the tumor only partly diminished after the fluid had escaped, and that a transparent fluctuating swelling still remained; this is then pressed against the canula, which I had retained in the first sac, and re-introducing the trocar, punctured it, and let out the fluid. I did not inject this case, in consequence of the peculiarity just named, and as I never saw the patient after, cannot tell whether the disease returned.

The only precaution necessary in the performance of the operation of injection is to push the canula quite home into the cavity of the tunica vaginalis, for if it be only partly inserted, and not beyond the slit at the extremity of the canula, when you inject the fluid, you will throw it into the cellular membrane of the scrotum, and not into the tunica vaginalis,—an accident which will probably produce sloughing of the whole scrotum. This accident I have known to occur several times with young operators, who are liable rather to push the trocar gently into the scrotum, and to jerk it in with the quick semi-rotatory motion necessary to its perfect introduction, guarded, as I have already described, as to the extent of its intrusion, by the fore-finger placed on the canula, to limit the length intended to be introduced. When the gentle push onwards of the instrument is the force employed, the shoulder of the canula is very likely to carry the tunica vaginalis before it, without entering the cavity, so that the injection is only thrown into the subcutaneous cellular tissues, the probable result of which occurrence is shown in the following case, described in Sir Astley Cooper's notes. "I injected a hydrocele for a man between fifty and sixty years of age, and the disease returned; about two years after, this patient was re-admitted into Guy's, under the care of Mr. Foster, who gave permission to one of his dressers to inject it; the canula was not properly introduced into the tunica vaginalis, so that the fluid was thrown into the cellular membrane of the scrotum; violent inflammation followed, mortification ensued, and the patient died." I have three times known this accident to occur.

As soon as you find, upon turning the stop-cock, that the injected fluid does not return through the canula, you may be certain either that the injection has been thrown into the cellular membrane, or that the canula has slipped out of the tunica vaginalis: some means must therefore be adopted

for the evacuation of the fluid, and this can only be effected by incision. Lay open the tunica vaginalis in the case of the canula having accidentally slipped out, and make several incisions into the scrotum if the fluid be thrown into the cellular membrane, and in either case, if these plans be adopted, the dangerous effects may generally be prevented.

[*Congenital hydrocele* differs from the common species in having a communication with the peritoneal cavity, into which the fluid may be returned by pressure. In this form of hydrocele, of course injection is not to be thought of; a truss should be worn with the view of obliterating the communication between the cavities. Mr. Cooper observes:]

Acupuncturation may be safely adopted in cases of congenital hydrocele that are not cured by the pressure of a truss.

The mode of proceeding is to insinuate the needle into the tunica vaginalis by several punctures, which permit of the exudation of the fluid into the cellular membrane, where it becomes absorbed. Dr. Lewis, of Finsbury Square, was, I believe, the first who recommended this mode of operation for the cure of hydrocele generally, but I acknowledge that I have only found it useful in cases of hydrocele in young children, and on one occasion in a case of congenital hydrocele in an adult.

Encysted Hydrocele is so termed when the fluid, instead of being contained within the tunica vaginalis, is secreted in an adventitious sac; these cysts are well described by Mr. Curling as being analogous to the aqueous encysted tumors which are developed in the kidney and liver, and I think he might have added, other organs covered by a serous membrane, for I have never found analogous cysts excepting under these splanchnic serous coverings. In the testicle they are usually found between the epididymis and its serous covering, but are sometimes placed between the tunica vaginalis and the tunica albuginea of the body of the testicle: in either case upon examination the tumors give the idea that they are completely adventitious, and that they are superadded to the natural structures of the part, while common hydrocele seems to implicate all the natural structures, and is, indeed, merely an inordinate accumulation of a natural secretion.

On the 4th of January, 1845, Mr. Tilsit, of Blackfriars Road, brought me a patient who had a small tumor in the scrotum, which, upon examination, felt precisely like a supernumerary testicle; and, what is singular, when pressed, gave the same sensation to the patient. Upon examination, the tumor, in this case, was found to be quite transparent, which proved it to be one of these aqueous encysted tumors. I punctured the tumor with a needle, ordered a lotion of hydrochlorate of ammonia and spirit of wine and water, and a suspensory bandage: the patient perfectly recovered.

December 1st, 1837, a gentleman aged 54, residing near Bristol, consulted me for disease of the left testicle, but stated, at the same time, that he had suffered very little pain or inconvenience. Upon examination, I found a small swelling, about the size of a walnut, situated at the upper part of the left testicle, immediately over the head of the epididymis, occupying the space between it and the spermatic cord. The tumor was fluctuating, and I at first considered it to originate from a varicose state of the veins: but, as I could not empty the swelling by pressure, I examined it as to its transparency, and found it perfectly translucent. I punctured it with a needle, squeezed out the fluid into the surrounding cellular membrane, ordered evaporating lotions and purgative medicines, and directed the patient to wear suspensory bandages lined with oil-silk. This gentleman wrote to me two months afterwards, and described himself as having perfectly recovered.

[*Hydrocele of the cord* is much more difficult to diagnose than hydrocele of the tunica vaginalis, having a great resemblance to bubonocele. As to its pathology, Mr. Cooper observes:]

Mr. Curling seems to have adopted Mr. Pott's opinion, that this disease is an œdematous condition of the cellular membrane of the cord—an ana-

sarcous effusion; but, from two or three cases I have seen, I am inclined to believe that the collection of fluid is within the serous membrane itself, although there can be no doubt that an anasarcous condition of the cord does occur, as in other parts of the body, and which may be cured by the same local and constitutional means employed for anasarca generally.

I remember some years ago seeing the beadle of St. Martin's parish, with Mr. Streeter, then of Drury Lane: this person was the subject of a swelling of the scrotum and spermatic cord, which were both so fluctuating that I was led to puncture the scrotum with a trocar; only a few drops of fluid followed, and the œdematous condition was at once proved. Several small punctnres were made, constitutional remedies prescribed, and the patient was relieved; but I believe subsequently died, under the care of Mr. Streeter, of diseased kidneys.

I should consider the best treatment for true hydrocele of the cord, whether seated in the inguinal canal or below the external ring, to open the tunic, evacuate the fluid, and apply a truss. I should hesitate before I employed an injection, from the dread of the ill effects which might result from the close proximity of the peritoneum: but this mode of practice is sometimes recommended.

Encysted hydrocele of the spermatic cord I should consider as similar in every respect to encysted hydrocele of the testicle, excepting in situation; that they are always in both cases exterior to the cavity of the tunica vaginalis, and contain a limpid, uncoagulable fluid: whether or not the fluid of the encysted hydrocele of the cord contains spermatozoa, I believe has not been ascertained. The separate sacs which are sometimes found in the tunica vaginalis of the cord are not, in my opinion, to be considered as encysted hydroceles, but as true hydrocele of the cord in the complex form, such as has already been described sometimes to occur in the hydrocele of the testicle.

The means to be adopted for the obliteration of these cysts, if they do not spontaneously disappear, are either acupuncturation or seton, the former of which should always be first attempted before having recourse to the more dangerous mode of the introduction of a silk into the cyst.

Hæmatocele is a collection of blood instead of serum in the tunica vaginalis; and the diagnostic marks between hæmatocele and hydrocele are, that in hæmatocele, the effusion of blood results at once from the lesion of a blood-vessel, and therefore rapidly forms upon the application of the exciting cause; while the fluid of a hydrocele results from an inflammatory action, and only gradually accumulates. In hæmatocele the tumor is always opaque, and much heavier than in hydrocele; consequently greater inconvenience is experienced. If called to a recent case of hæmatocele, you will generally find the scrotum more or less ecchymosed and distended by a fluctuating tumor, and probably the history of the case will prove that a blow or some other external force has been the cause of these appearances, and is sufficient to constitute the diagnosis of the malady.

Hæmatocele not unfrequently results from the operation of tapping a hydrocele, in consequence of the trocar wounding some abnormally distended vessel, either of the skin or tunica vaginalis. In such a case, a few hours after the serum has been drawn off, the swelling is as large as ever, from the accumulation of blood. The largest hæmatocele I ever saw was produced in this manner.

[The treatment of hæmatocele is to lay open the cavity, and turn out the coagulum.] *Medical Gazette, March* 16, 1849, *p.* 443.

107.—CASE OF ABSCESS OF THE SPERMATIC CORD.—By Dr. W. P. Brookes, Surgeon to the Cheltenham General Hospital, &c.

[Dr. Brookes first visited the patient, a man aged 51, of spare habit, on

the 28th of June, 1848; and found him suffering from feverishness, constipation, and abdominal tenderness. On the right side above Poupart's ligament was a large and deep depression caused by the pad of a Salmon and Ody's truss, which he had worn for many years for a double inguinal hernia: and this spot was the seat of exruciating pain and tenderness. Active treatment (leeching and calomel with opium) was adopted; and on the 2d. of July the abdominal pain had entirely ceased. There was still, however, the same heat and pain at the spot where the truss had been worn. The further report of the symptoms at this time is the following:]

Intense hiccough appeared this morning, which gives him uneasiness, and makes him irritable and anxious; countenace shows great anxiety; he takes but little sustenance; more fulness on the spot where he complained of pain, and a swelling of a pyriform shape, extending under Poupart's ligament from this part down into the scrotum, appeared to-day; it follows the course of the spermatic vessels from the ring; the cord is situated behind the swelling, and feels hard, tense, and most painful to the touch; the hernia is not to be discovered; the tongue dry, glazed and red, but at night it moistens, and has done so for the last few evenings. Pulse 120, quick and sharp.

3d.—Hiccough continues much the same, and he rarely gets an interval of five minutes without it; he has also every two or three hours severe fainting paroxysms, in which he can scarcely draw breath, and is compelled to be supported up in bed: when in these attacks he appears as if in a dying state, and they last for two or three minutes at a time: the stethoscope can discover no abnormal signs of disease in any of the viscera or vessels of the chest; the tumour in the groin is hard, red, and painful to the touch; does not fluctuate, nor does pressure exert any influence on it; no intestine can be discovered down; twelve leeches to be applied to it; warm fomentations afterwards. Bowels open twice to-day; is in a most exhausted state; to take beef-tea, brandy and water, and the following mixture:—Two drachms of spirits of compound sulphuric ether, water six ounces, one tablespoonful every two hours.

[He improved a little up to the 8th, upon which day, Dr. Brooks says:]

Towards the evening I was sent for in great haste, when I found my patient in a dreadful state of collapse, with dificulty of drawing breath: cold perspiration streaming from his forehead and face, and we considered him in a dying state; he could just swallow. By the use of ether, brandy, and ammonia, he gradually rallied. Warm poultices to be kept applied to the swelling in the groin.

10th.—Tumour very painful: will not allow it to be handled much: it extends nearly to the lowest part of the scrotum, and takes quite the shape of scrotal hernia. I can discover no intestine down. Bowels well opened; great sickness came on to-day, and slight fluctuation appeared in the tumour, which is becoming red and inflamed. On moderate pressure it gives a gurgling noise, as if it contained air. Tongue red and moist. Continue quinine and ether. On a consultation with Mr. Eves and my patient's master, it was deemed prudent not to interfere with the tumour to-day, and warm applications were applied.

16th.—Tumour continued increasing in size up to this day: it appears to have no inclination to point on pressure; it gives an increased gurgling-like noise of air, and on filliping it produces a drum-like sound. We can discover no intestine in the scrotum. To-day we thought it advisable to dissect down layer after layer, as if operating for hernia, and after dividing the first two layers a most fœtid offensive matter escaped to the extent of nearly half a pint, raised with bubbles of air. The constitution suffers greatly, and he has become very weak, irritable, and anxious. To take beef-tea, brandy, and as generous food as he can, with occasionally porter and port wine. Instead of brandy, continue the quinine mixture.

18th.—Tongue moist; pulse fuller and more natural; bowels opened;

urine healthy and plentiful; sleeps well. A slough coming away from the wound in the scrotum, which discharges about six ounces daily, and smells most offensively.

[After this time he went on well, the discharge gradually diminishing and the constitutional symptoms subsiding, until he was quite restored to health. The original cause of the mischief, Dr. Brooks considers to have been the pressure exercised by the pad of the truss which had slipped out of its position;—the inflammation locally excited, having rapidly spread to the peritoneum. Dr. B. remarks:]

The hiccough through the early part of the case was a very troublesome symptom, and doubtless was first caused when the matter commenced forming, as it altogether ceased on the complete formation of the pus: another obscure point in the treatment was the peculiar gurgling sensation and drum-like sound given out by the tumour when it was examined, and which gave us the idea that it was in some measure, either dependent on intestine, or that the tumour communicated with the cavity of the abdomen, and therefore it rendered us anxious not to use surgical interference until more distinct marks of its character appeared.

On opening the swelling the gurgling noise was fully accounted for by the escape of air with the pus, and I doubt not this air was generated by decomposition of the cellular tissue surrounding the parts and communicating with the sac of the al s ess. Another symptom (no stethoscopic examination could discern disease of any of the organs of the chest) was the peculiar paroxysms of syncope; it is quite impossible for any one but an eye witness to imagine the extraordinary nature of the severity of these attacks, and frequently we considered the patient in a dying state from them. I have some difficulty in attributing them to any cause, for I never before saw anything at all approaching the symptoms: I imagine they arose from the irritation and exhaustion the system was undergoing while purulent matter was forming, for the complete formation of the pus they gave way considerably, and shortly after the exit of it, entirely disappeared. The powers of the constitution in this man were obviously shown, and the benefit to be gained by freely pushing stimulants with care, was extremely well marked, for he frequently rallied wonderfully when all hopes of life had nearly ceased.

The stage of sphacelus which for a few hours appeared, I must attribute to the application of a cold poultice to the parts by mistake, and the extreme want of constitutional power in the system rendered cold a dangerous remedy in this state. Upon the application of warmth it speedily gave way, and the scrotum again took on a healthy action. The hernia on the side of the injury descends far less than on the left, and for the first few weeks it could be barely said to come down at all; in fact its descent now only takes place on violent straining or exertion: this I consider was from the abdominal ring being obliterated in a great degree by the inflammatory action taking place upon and around it. I have found much difficulty (since recovery) in adapting a truss to the right side, from the pain it gave him when he first commenced wearing it, but having now had it constructed with a soft slightly concave pad in the centre, and elongated nearly half an inch more than usual, he manages to wear it without uneasiness. There is at present some pain on pressure over the abdominal ring, and the cup-like depression from the former pad of the truss still exists. The right testicle and spermatic cord are quite healthy and of their natural size.

The similarity of this disease in many respects to hernia is very strong, and may easily have (at the onset) been mistaken by a careless observer for a case of strangulated scrotal hernia.

1st. It gradually descended from the abdomen in the course of the cord, which was also situated behind it.

2ndly. It protruded much while the patient was in the erect posture.

3dly. It gave some impulse on coughing.

4thly. The gurgling noise and drum-like sound of the tumour appeared as if it contained flatus.

5thly. The costiveness and sickness which frequently appeared, had not the intestine readily returned, would, I doubt not, have led to the belief that the whole of the symptoms arose from hernia.

Medical Gazette, February 2, 1849, *p.* 192.

108.—ON ABSCESSES IN THE PERINEUM.—By BRANSBY COOPER, Esquire, F.R.S., &c.

Abscesses in the perineum sometimes result from stricture, even when the obstruction is not sufficient to produce actual retention of urine. These abscesses occur from the dilatation of the urethra behind the stricture, leading to ulceration of its structures, and consequent infiltration of urine; in such cases swelling in the perineum soon results, and rigors supervene, indicating the formation of pus: a free opening into the perineum should be immediately made, and the catheter passed, if practicable, along the natural passage of the urethra into the bladder; should you not be able to effect this at the time, repeated gentle efforts must be made to restore the normal continuity of the canal. Such ulceration of the urethra may, however, occur, as I have already said, without being produced by an imperneable stricture, so that it frequently happens in such cases, that the catheter passes readily into the bladder without meeting any insuperable obstruction; but this should never be attempted until the abscess be opened, as the accumulated matter itself might cause considerable impediment to the passage of the instrument. The following case affords an example of this fact:—I was sent for to see a patient who was suffering from retention of urine, of which the symptoms were so urgent that I immediately attempted to pass a catheter; not succeeding, however, in relieving the patient, I proceeded to examine the perineum, where I discovered a tumour of considerable size; in this I made an incision, and a quantity of pus and urine were immediately evacuated. As the patient stated that he had been the subject of stricture for many years, I considered it better to open at once the membranous part of the urethra; I therefore passed a female catheter into the bladder, and, drawing off the urine, relieved the patient from the symptoms arising from the retention; I next passed a male catheter along the natural passage of the urethra, as a preliminary to the division of the stricture; to my great surprise the instrument passed readily on, and when the female catheter was withdrawn, at once entered the bladder: this circumstance showed that if I had attempted to pass the male catheter before I divided the membranous portion of the urethra, I should have found the more formidable part of the operation to be altogether unnecessary. The experience I derived from this case has since often prevented me from cutting into the membranous part of the urethra, after opening an abscess in perineo, without first attempting to pass the male catheter along the natural course of the urethra; such a precaution is, indeed, rendered doubly necessary by the fact that abscesses in the perineum may result from external injury, without any other implication of the urethra on the canal than that arising from the mere pressure of accumulated matter, the evacuation of which immediately relieves the symptoms.

Medical Gazette, December 8, 1848, *p.* 455.

Retention of urine, whether arising from permanent stricture, the presence of calculus, or, indeed, from any cause which prevents the flow of urine, may be spontaneously relieved by ulceration of the urethra, behind the cause of obstruction, from which extravasation of urine, and subsequently abscesses must necessarily result, and fistulous openings being established, the patient is relieved by the flow of urine through them. Such a condition must not, however, be allowed to remain; and it is quite clear that the fist-

ula cannot be cured without the stricture being divided so as to restore the natural canal for the passage of the urine. Puncture of the bladder in such cases would, in my opinion, be quite ineffective in relieving the patient, and the cure can only be produced by dividing the stricture, in perineo, as I have already described, and by freely laying open all the sinuses, however numerous they may be. *Ibid, p. 955.*

109.—ON RETENTION OF URINE CAUSED BY VALVULAR OBSTRUCTION.
By M. Mercier.

In the Gazette des Hopitaux for the 23rd and 27th January, there appeared two papers on the remedial measures for the retention of urine in old people. M. Mercier states that his researches have shewn him that the cause of retention in these cases, is what he terms valvular obstruction, which he divides into two kinds, muscular and prostatic; the former, he states, arises from the anatomical arrangement of the muscular fibres at the orifice of the bladder, presenting even in their normal condition, a transverse elevation of the mucous membrane covering them; this, he states increases to such an extent in old people, as to present a true valvular obstruction; and to remedy this cause of retention, he proposes incising the valvular elevation at several points by means of an instrument of the form of the ordinary short curved sound used for exploring the bladder, and containing a small cutting blade which can be projected for the purpose of incising the valve, after the instrument used as an exploratory sound has ascertained its size and position. He states, that at first he tried excision of the projecting portion, but found this means uncertain, and that he now finds deep incision across the structure of the valve perfectly sufficient. If no accidents occur during the first few days, he applies no other treatment (nothing is said of what these accidents may be) except for the purpose of preventing hemorrhage, which has occasionally though rarely occurred; he recommends that the bladder should not be allowed to be empty, and therefore directs the use of injections of cold water; he finds the presence of the urine sufficient to prevent too rapid union of the incised edges.

By the term prostatic valvular obstruction is meant, the enlargement and projection of the middle lobe of the prostate. For the cure of this cause of retention, it is proposed to twist off or break down the projecting portion. This is effected by means of the lithotrite of M. Jacobson, which consists of two branches enclosed in a sheath; the branch corresponding to the convexity of the curve is formed of separate portions articulated together, so that when the blades are projected from the sheath, the articulated branch forms a sort of noose; when the istrument is closed, it presents the appearance and serves the purposes of an ordinary sound. For the operation at present in question, the instrument introduced closed, is used as a sound, and when the valvular projection of the prostate is felt by it, the instrument is opened, the blades are projected from the sheath, and the enlargement of the gland is seized in the noose, and then by drawing back the blades within the sheath, the instrument is closed, and the valvular tumour either twisted off or broken up into fragments which become decomposed in the bladder and pass off with the urine. The only after treatment adopted is the injection of cold water into the bladder to prevent hemorrhage.

It is also mentioned that M. Mequel d' Amboise has obtained favourable results in such cases by the employment of a method at once ingenious and *very simple* (save the mark !). This simple measure consists in taking six small leaden pellets of a conical form, the base of each being about two-fifths of an inch in diameter, and to the apex of each is attached a long and delicate stalk of very flexible iron wire; these are introduced one by one into the bladder by means of a silver catheter open at both ends; and this being effected, the catheter is withdrawn. The operator then unites all the

flexible iron wires which project at the orifice of the urethra, and by drawing them towards himself, he pulls all the leaden cones into a mass at the neck of the bladder; this he does with the intention of causing compression of the enlarged lobe of the prostate, but, according to Mr. Phillips, it would seem probable that the glandular projection is entangled amongst, and crushed and torn by, the forcible collection of the leaden cones. When the operation is completed, the cones are pushed back into the bladder, and then removed one by one by means of the attached wires.

Monthly Retrospect, April, 1849, *p.* 85.

110.—ON SENILE ENLARGEMENT OF THE PROSTATE.

The enlargement seems to be true hypertrophy, as it is rarely attended by any alteration of texture, although I have in some few cases found the gland softer, and in others harder, than natural. The symptoms in enlargement of the prostate gland depend with respect to their urgency upon the size it has acquired; they are, sense of weight in the perineum, intolerance of pressure from the hardness of a seat; difficulty in passing the urine, and also in voiding the fæces which will be found flattened by the encroachment of the hypertrophied gland on the rectum.

At this stage of the complaint, the retention of urine occasionally supervenes, rendering the introduction of a catheter necessary. This operation should be performed with the utmost gentleness, as the slightest flow of blood would cause decomposition of the urine, and consequent aggravation of all the symptoms. An elastic gum catheter should always be used for drawing off the water, and, if possible, it should be introduced without a stilette; leeches should be applied to the perineum; the rectum emptied by means of enemata; and suppositories, recumbent position, and soothing remedies employed. I have also found colchicum of great use in such cases, and I believe that its beneficial influence arises from the circumstance that this disease frequently attacks subjects of a gouty diathesis. I usually prescribe the colchicum in the following form:

℞ [Ext. colchici acet. gr. j; pil. hydrarg. gr. j.; pulv. Doveri gr. v.; ext. colocynth. co. gr. iij. M. ft. pil. bis quotidie sumenda.

As the complaint takes its origin from a particular epoch of life, nothing more than relief of the symptoms can be expected; but nevertheless, by a judicious system of diet, by keeping the patient from excess of bodily exertion, and from vicissitudes of temperature, his life, which was scarcely supportable under the violent symptoms of the disease, is rendered comparatively free from pain and inconvenience.

It does not always happen that the whole of the prostate gland becomes hypertrophied in old age; but very frequently the third lobe only is affected, or perhaps it may more properly be said that a new development arises; for in a state of health, at the adult period, the third lobe is scarcely perceptible. When this third lobe enlarges, it presses the inferior region of the bladder or "trigone" upwards above the commencement of the urethra in the bladder, preventing the evacuation of the urine, and consequently producing retention. Nor is this the only inconvenience; for by the raising of the bladder immediately behind the prostate, a kind of reservoir is established below the entrance to the urethra; and, in the effort to empty the bladder, a portion of its contents is always left; this becomes specifically heavier than the newly-secreted urine, which does not intermix with it: and, after a time, the retained urine undergoes decomposition, which gives rise to very urgent symptoms—such as frequent desire to make water, tenesmus, deep-seated pain in the perineum, and liability to positive retention. It is quite clear that these symptoms cannot be removed while the exciting cause remains; the fœtid urine must therefore be immediately drawn off by means of the catheter. In such cases there is, however, a

difficulty in passing the instrument, as the enlarged lobe offers some degree of obstruction to its passage, and this is only to be overcome by employing a longer and larger catheter than that usually made use of; this instrument is generally termed the prostatic catheter. The mode of introducing the catheter in such cases is similar to that in ordinary practice, until it arrives at the point of obstruction, when the penis and instrument are both to be drawn forwards for the purpose of straightening the urethra; the handle of the catheter is then to be considerably depressed, so as to tilt up the point, and it is then pressed onwards into the bladder. But, having effected this, the urine would only be drawn off to the level of the urethra, and the heavier fluid would still remain, unless further means were employed for its removal. The cleansing of the bladder may be effected by injecting it with tepid water by means of a syringe; and an improved instrument has been invented for this purpose, by which a continuous current is kept, the same stroke of the piston removing one quantity, and supplying a fresh one. Constitutional remedies must not be neglected; and when an alkaline state of the urine exists, medicines of an acid character are generally indicated. Among the most efficacious of these will be found the following:

℞. Nitro-hydrochlor. acid. gtt. iij.; syr. papav. 3 iij; inf. colomb. ℥iss. M. Ft. haustus ter quotidie sumendus.

In addition to this an opiate suppository at bed time will often be found of great advantage; but if an acid condition of the urine be not thus restored, liq. potassæ will frequently be found capable of re-establishing the normal acid state: this anomaly has been accounted for by Dr. G. O. Rees, on the supposition that the alkali renders the secreted urine less irritating to the mucous membrane of the bladder, and preventing the secretion of alkaline mucus, for which the urine had acquired its abundant preponderance of alkali.

I must again direct your attention to the propriety of employing the prostatic catheter in cases of enlarged prostate; for I have frequently known great mischief arise from a perseverance in the attempt to relieve a patient by the ordinary instrument. *Medical Gazette, Dec.* 8, 1848, *p.* 957.

111.—NEW INRSRUMENT FOR DIVIDING STRICTURES.

Mr. Civiale has invented a new instrument for the division of indurated strictures of the urethra. The principle of the improvement consists in the division of the strictures *from behind forwards*, instead of cutting in the reverse directions, as hitherto practised by surgeons. The new instrument, according to M. Civiale, has the advantage over the old method in the fact, that the extent of the incision can be precisely ascertained, and controlled by the operator, and a division of all the tissues can be performed with safety. *Dublin Medical Press, April* 11, 1849, *p.* 234.

SYPHILITIC DISEASES.

112.—ON THE IMPORTANCE OF DISCRIMINATING DISEASES OF THE URETHRA.—By Thomas Bartleet, Esq.

[Two mistakes are often made in the treatment of diseases of the urethra. One consists in regarding as a poisonous discharge produced by gonorrhœa, that which is inoccuous, and caused by irritation merely in the passage—such, for instance, as the presence of a stricture: the former being a virulent poison capable of reproduction *ad infinitum*, while the latter is perfectly harmless.

Want of due discrimination in this case not unfrequently inflicts irreparable injury on the patient. For example: when a stricture, attended with

a discharge from the passage, is observed soon after an attack of gonorrhœa, the patient naturally considers that he is suffering from the gonorrhœa, which had not been properly cured; and should the person who has the treatment of the case entertain the same opinion, the result will be that the patient will continue taking copaiba, cubebs, &c., off and on for months, perhaps years, to the great injury of his stomach and system in general, while the stricture all the time is gradually getting worse. There is a curious point in reference to the effect of copaiba on this kind of discharge, and it is this—the discharge is always relieved, but never removed by copaiba, unless in conjunction with the use of bougies. This fact again tends materially to perpetuate the erroneous treatment, as the inference at once suggests itself, that copaiba, &c., will cure this discharge if persevered in, inasmuch as it always exerts a marked influence on it. But however good the argument, the practice is bad, for it will never cure such a discharge. The practitioner very commonly remains in ignorance of his error, by reason of the patient becoming dissatisfied with his treatment, on feeling no permanent benefit from it, and therefore soliciting the assistance of various others for the relief of what he and they regard as an incurable clap.

Such a mistake must be attended with serious results in every case in which it is made, but in some they are very distressing. When, for instance, a man's marriage is postponed from time to time on account of his suffering, as he thinks, from incurable gonorrhœa, his feelings are terribly worried, and if he happen to be of an excitable, nervous temperament, it renders his life miserable in the extreme. Again, a worse case than this arises when a discharge caused by a stricture first appears after a man is married, and possibly years after he had contracted the gonorrhœa, which was the origin of it. A suspicion of the faithlessness of his wife will necessarily force itself on his mind, as he knows he has had intercourse only with her; while she, on her part, conscious of her own innocence, is convinced of his inconstancy, and considers his accusation of her as a mere subterfuge to screen himself. If, under these circumstances, a medical opinion is given in haste that the husband is afflicted with gonorrhœa, one family, at least, is rendered unhappy for life.

The case of a gentleman from Norfolk who came to me for the treatment of a very bad stricture, is instructive in showing the injury which may be inflicted on a patient by this error in judgment. When he put himself under my care he was in a sad state; he could only pass urine by drops, or occasionally in a very fine stream; he had a constant copious discharge from the urethra, which was the source of great mental annoyance, as well as physical discomfort to him, and he was altogether in a most pitiable condition. On my inquiring whether he had not felt some premonitory symptoms of the gradual approach of the stricture, he said he certainly had but had not referred them to the true cause, his medical attendant having assured him that they were occasioned by gonorrhœa, which, said he, "worried me exceedingly; for I have been married many years, and this discharge has come on subsequently, without my having had intercourse with any other than my wife, who has always assured me that she was never troubled with anything of the kind. However, as my medical attendant confidently affirmed that it was gonorrhœa from which I was so often suffering, I could conclude it to be no other than that disease, and it was the constant cause of a great deal of unpleasant feeling between myself and wife, until I became convinced, by the difficulty in passing my water, that it was produced by a stricture."

Occasionally the discharge caused by the irritation of a stricture is attended with many of the symptoms of a regular gonorrhœa; but when it is generally known that it is so, there will be experienced but little difficulty in practice, in distinguishing these discharges, which differ so materially in their effects on the system. An important benefit, however, might be rendered to the profession, as well as to sufferers in diseases of this kind,

by the attention of medical men being directed to a close observation of the distinctive character of the matter generated in these two diseases, which are now so commonly confounded.

The other mistake refers also to the presence of a stricture. It is the received opinion, being so laid down in all works on surgery, that the stream of urine through the urethra bears an exact ratio to its calibre. It would be so, were the urethra a dead body; but being endowed with vitality which is acted upon by muscles,—whether in its substance or not is immaterial,—the result is, that a person afflicted with a permanent stricture may pass his urine in a good stream, because, when he feels a desire to evacuate, his urethra, obedient to his will, opens out, so to speak, at its strictured part, and discharges a larger-sized stream than would have passed through it, had it been an inanimate body. The stream of water would be small in proportion to the constriction in any part of a leaden tube, for instance; but the urethra, being endowed with an exquisite sensibility, and if not muscular itself, surrounded by muscles which act on it, can bear no analogy to a tube that is incapable of any sort of self-motion or propelling power.

In practice this consideration is of high importance, and I am anxiout to impress this on the profession; for if a person afflicted with a permanent stricture passes his water in a fair stream, a surgeon, in this particular misled by his teachers, will pronounce the case not to be stricture, to the great injury of his patient. Indeed, no error that can be made in surgery is attended with more serious results than this, because the case, from being misunderstood, gradually gets worse, in spite of all treatment, bougies not being introduced, until some exciting cause having supervened, irritation comes on in the passage; no urine whatever can be passed; and the patient's life will be in extreme danger, should he not then be efficiently treated. *Lancet, March* 24, 1849, *p.* 313.

113.—ON THE TREATMENT OF GONORRHŒA BY VINUM COLCHICI.

Dr. Ficinus, of Dresden, confirms the opinion formed by Eisenmann, of the value of vinum colchici in gonorrhœa. He gives from twenty-five to thirty drops three times a day, combined with tinct. opii., enjoining, at the same time a low diet, warm bath, &c. These means he has found attended with unprecedented success in the treatment of gonorrhœa and other inflammatory discharges from the urethra in males, and from the vagina and uterus in females. The details of ten cases are given in illustration.—*Casper's Wochenschrift*, Aug. 26, 1848. *Medical Gazette, March* 16, 1849, *p.* 482.

114.—TREATMENT OF VENEREAL WARTS.

The most convenient and complete, and least painful mode of removing these, was found to be by strong nitric acid, applied only to the excresence. It destroys it so entirely as to cause its separation in a short time, without injuring, if carefully applied, the surrounding parts.—*Amer. Jour. of Med. Sciences*, Jan., 1849. *Medical Gazette, March* 23, 1849, *p.* 507.

115.—USE OF SULPHATE OF IRON IN CHANCRE AND GONORRHŒA.

[An anonymous correspondent of the Lancet says:]

The whole class of caustic agents, when applied to the Hunterian chancre (though the *potassa fusa cum calce* be used till the ulcer be "punched out," as recommended by M. Ricord) form an eschar with pus still secreting; in

fact, the morbid cells have not been destroyed. The alkaloids and hydrocarbons are equally inefficacious.

If a chancre be perfectly freed from its eschar and the enclosed pus, at the bottom of the excavation may be observed minute white points or germs, secreting, slowly, the morbid virus. If, now, the proto-sulphate of iron, minutely pulverized, be dropped into this excavation, the parts will instantly assume a charred appearance, the metal is absorbed into the tissue, the morbid cells or germs will instantly cease to secrete pus, the cleared cavity will shortly granulate, and a smooth surface, without induration, will be the result of the use of the proto-sulphate of iron. The chancre is destroyed.

It is known to chemists, that the proto-sulphate of iron absorbs large volumes of oxygen and nitrous oxide gases. The proto-sulphate of iron, I have observed to be the most powerful agent for arresting decomposition in animal and vegetable substances. Inflammation and decomposition in the living tissue is likewise arrested by it.

In gonorrhœa, we have now an agent arresting the morbid cellular action in the salts which should be used in solution super-saturated.

In leucorrhœa, and in simple ulcers, the morbid action is arrested or peroxidized by this metallic salt.

Large doses of this salt have been exhibited in obstinate diarrhœa, with great benefit.

The action of this salt will produce a great change in superseding mercury in the treatment of diseases of specific origin.

Lancet, Dec. 9, 1848, *p.* 647.

116.—TREATMENT OF URETHRAL PAINS FOLLOWING GONORRHŒA.—By M. VIDAL.

M. Vidal, after stating the frequent occurrence of severe persistent pain in the course of the urethra, after all traces of discharge have completely ceased, mentions that, having frequently remarked that the pains were relieved by pressing the penis with the fingers, he was led to the idea of treating these cases by compression, and has found the plan useful, affording a perfect cure in many cases, and a marked alleviation in others. The operative procedure, says M. Vidal, is so simple, that it is scarcely necessary to mention it. "The surgeon takes a long strip of diachylon plaster, one centimetre (two fifths of an inch) in breadth, and rolls it around the penis in the same manner as a common bandage, beginning at the glans; or, still better, he may apply it more accurately by using a number of small strips of plaster, each of which shall only be sufficient to encircle the organ once, and the two extremities of each strip should be made to cross upon the urethra, for the purpose of insuring the firmness of the dressing. The principal point to be attended to is the degree of compression, which ought to be as firm as possible, without interfering with micturition, which would, of course, necessitate the removal of the dressings. The compression should be continued for a considerable period after the cessation of the pains, to prevent their return."

Dublin Medical Press, Feb. 21, 1849, *p.* 120.

117.—OBSERVATIONS ON STRICTURE OF THE URETHRA.—By PROFESSOR SYME.

[There is a form of stricture, marked by the "tightness of the contraction, the resilient disposition displayed after dilatation, and the great degree of irritation induced by attemps to effect this," in which Mr. Syme has advised

the free division of the contracted part upon the director. The following is a case of the kind alluded to:

David I., aged thirty, a confectioner, was admitted on the 17th of December, suffering from the symptoms of stricture in the urethra in a very aggravated form. He had had retention of urine for twenty-four hours, and stated that he was liable to such attacks, in the intervals of which, to use his own words, "he could neither make nor keep his water," being unable to void it voluntarily in a stream, or prevent it from constantly exuding by drops, with the effect of wetting and rotting his clothes, irritating the skin, and causing ulceration of the prepuce and thighs. His condition was indeed wretched in the extreme, and had existed, with progressive aggravation, for five years. The stricture would not permit the smallest catheter to pass, but was so far relaxed by the attempts made to effect this, followed by warm bath, as to permit the urine to escape by drops.

On examination, Mr. Syme found that there were two contractions of the canal, one being at the neck of the glans, and the other about four inches and a half from the orifice. It was the latter which, from its extreme tightness and excessive irritability, appeared to be the chief seat of the patient's complaint. The smallest bougie, and even a probe, could not be passed through it, but after several trials a very slender knitting needle was introduced, and followed by others of somewhat larger size. No relief was thus obtained, and after several weeks had been spent in the hospital without the slightest benefit, it seemed necessary to adopt a more efficient course.

On the 20th of January, a small grooved director, which had been constructed of the same size as the largest knitting-needle permitted to pass, was introduced, and the patient being placed in the position for lithotomy, an incision was made in the middle line of the perinæum, so as to let the conductor be felt, and allow the knife to be inserted into its groove. The stricture was then divided, and a moderate-sized catheter secured in the urethra to prevent any risk of extravasation.

The patient seemed to experience relief from the instant the stricture was divided, and suffered no inconvenience from the catheter, which was withdrawn at the end of forty-eight hours. He made all his water through the wound for three or four days, and then gradually found it to resume the natural passage. On the twelfth day after the operation he had ceased to discharge any urine by the wound. He could retain it for five hours at a time, and passed it in a full stream, and he bore the introduction of an ordinary-sized catheter without uneasiness. On the 2d of February he was dismissed, in all respects perfectly well.

It seems deserving of consideration how far this mode of treatment might be adopted with advantage in the ordinary form of stricture, especially in hospital practice. Patients seldom consent to remain until the dilatation is fully effected, and after being discharged, hardly ever use the necessary precautions for preventing relapse. They are therefore frequent applicants for readmission, and in the intervals are exposed to many dangers, such as those of complete retention and perinæal abscess, from which, if they escape with life, they may be deemed fortunate, while the institutions which afford them relief, are burdened with their maintenance during a protracted period. Six weeks may be mentioned as the shortest duration of the treatment by bougies, requisite for fully dilating a tight stricture, and a fortnight as the longest required for the remedy by incision. But the former method is uncertain, attended with more or less risk, according to the skill and care of the surgeon, and inadequate to afford protection against relapse, while the latter is perfectly certain, safe, and permanent in its effect.

The treatment here recommended must not be confounded with either of two other methods, both of which should be banished from the practice of surgery. These are, division of the stricture by internal incision, and establishing a channel for the urine, by cutting upon the point of a catheter at the seat of obstruction. With regard to the former, Mr. Syme stated, that

independently of other obvious objections, he had found upon trial, that it did not afford permanent relief, and mentioned that one of the worst cases of stricture which he had seen in London was that of a gentleman who had been allowed to go to India, with the assurance that the treatment by internal incision had effectually protected him from any return of the contraction, but had not completed half the distance to his destination before the complaint was more troublesome than ever. The second mode of treatment seems still more objectionable, since it was not only apt to fail in affording the relief desired, but also impeded the efficiency of subsequent attempts founded upon a better principle. This operation, although it had been honored by being connected with the names of Hunter and Cooper, was generally the resort of inexperience or awkwardness in the use of instruments, since "impermeable" strictures existed more in imagination than reality; and it might be safely affirmed that there was no case of stricture through which, by patience and perseverance, a catheter or bougie might not be conveyed into the bladder. The great defect of the operation was, that it did not re-establish the canal fairly and continuously, but was almost sure to leave a hitch or projection at one side of the passage, which rendered its course angular, and led to mischievous consequences of a serious kind, especially the re-formation of stricture. When this happened, the subsequent treatment became peculiarly embarrassing, and even complete division of the contracted portion of the canal upon a grooved conductor, was not always sufficient to afford permanent relief. The risk of all such difficulties and dangers might be anticipated by adopting the method recommended, and cutting the stricture upon a director, when the canal, however much contracted, still preserved its proper course and direction.

Lancet, Feb. 17, 1849, *p.* 180.

118.—ON STRICTURE OF THE URETHRA.—By Brandby Cooper, Esq., F.R.S. &c.

[Mr. Cooper would substitute the name of "*irritable*" for that of "*spasmodic*," as applied to stricture, since the latter term involves the idea of the disease being caused by muscular action; while this is not really the case, except in the membraneous and bulbous portions of the urethra. Mr. C. observes:]

Any circumstance that produces irritation, and consequent extraordinary influx of blood to the urethra, will have a corresponding tendency to diminish for the time the size of that canal. This is the case during the natural excitement of the organ; as when it is in a state of priapism the urine can scarcely be expelled even in the minutest quantity. A partial determination of blood to the part leads, therefore, to a certain amount of obstruction, and constitutes what I consider spasmodic or irritable stricture. This condition may be readily distinguished from permanent stricture by the suddenness with which the patient is attacked by difficulty in passing the urine, unattended by any other premonitory symptoms than those of the mere cause of irritability—as protracted retention of the urine, hemorrhoids, or excessive venereal excitement. In the treatment of this affection, the catheter should not be employed at first, but a dose of opium with tartarized antimony given, together with the application of hot bath, and a warm purgative enema; and these measures will generally be found sufficient to remove the complaint without any instrument being had recourse to. If the catheter be passed without the sedatives being first employed, even should it effect its intended result, viz., relief from retention of urine, it would tend to increase the cause of the obstruction by irritating the urethra; it would also probably cause considerable bleeding, and perhaps lacerate the interior of the canal itself. I do not, however, mean to say that constitutional remedies alone will always cause the removal of the disease; for the congestion of the vessels of the irritated part, or perhaps

some subcutaneous effusion, may have led to permanent obstruction; and if that were the case, and local irritation present at the same time, the mixed kind of stricture already alluded to would be established. In obstinate cases of this mixed stricture, cupping in the perineum will often be found of great advantage; two grains of calomel and a grain of opium may be taken at bed-time, and also small doses of the sesquichloride of iron, and the bougie may at the same time be employed in a very gentle manner; but if it should produce pain and bleeding, caustic should be applied to the stricture; and this I believe to be an almost infallible means of subduing the irritability in some cases; and the following suppository at bed-time will be found to produce a very beneficial effect:

℞. Pulv. opii, gr. iss.; ext. hyos., gr. v.; sapon. hispan. q. s. ft. suppositorium.

But ordering the suppository, is not sufficient; you must also see it properly introduced into the rectum, otherwise it will increase, instead of diminish, the suffering of the patient. If, for example, it be only placed within the anus, under the influence of the sphincter muscle, it will produce an aggravation of all the symptoms; while if it be passed into the bowel above the sphincter, it will speedily produce the desired soothing effect.

[Mr. Cooper next speaks of permanent stricture, arising from adventitious deposit in the cellular tissue between the mucous membrane and the corpus spongiosum, by which the mucus membrane is pressed inward, and the canal narrowed. In the treatment of this disease, the first step is exploration of the urethra by a bougie. Mr. Cooper prefers that the patient should lie on a sofa during the introduction of the bougie, instead of standing against a wall which is the usual position. He says:—]

Having placed your patient in the proper position, you will oil a bougie or silver catheter (No. 6), and raising the penis to an angle of about 40° from the addomen, pass the instrument gently down to the stricture, against which you press it slightly, and equably, for the space of a minute, or perhaps rather more, according to the degree of pain the patient experiences. It may happen that the instrument soon passes the obstruction; if that be the case I do not advocate its further introduction, so that it may enter the bladder, but think it better to be satisfied with the progress already made. After the employment of the bougie, the patient should be kept extremely quiet during the remainder of the day, should live abstemiously, and at bed-time take the following draught:—

℞. Liq. potass. gtts. xx.; tinct. opii, gtts. x.; mist, camphoræ, ℥iss. Ft. haustus.

An aperient should likewise be taken the next morning. The instrument should be again passed about forty-eight hours after the first examination, and it may now be passed into the bladder, and left there for ten minutes or a quarter of an hour, unless it causes great irritation, for I have always found the cure to be greatly expedited by the continued pressure which the bougie thus keeps up. I have recommended No. 6 as the size of the instrument first employed, as I consider it less likely to produce irritation than the one of smaller size, for the latter is not only likely to catch in the lacunæ, but may also make a false passage by penetrating the sides of the urethra. If however No. 6 be found too large to pass through the stricture, smaller instruments must necessarily be used; but it should be borne in mind that they require a degree of caution in their introduction proportionate to the smallness of their size. If the instrument cannot be passed through the stricture into the bladder, a question naturally arises as to what other means are to be adopted for the relief of the patient. This depends entirely upon the urgency of the symptoms, especially in reference to the distention of the bladder from the retained urine; the judgment cannot

here be much guided by the expressions of the patient as to the amount of his suffering, for the pain which in one patient may be described as little more than mere inconvenience, may be complained of by another as excruciating agony. Therefore, the first thing to be done is to examine the state of the bladder per anum, and also through the parietes of the abdomen. If the bladder be felt pressing on the rectum, you may be assured that the distension is extreme, for it is in the posterior direction that the organ projects lastly under the influence of the internal pressure of the urine. I have but very rarely met with a case that did not admit of sufficient delay to allow of the trial of medicinal means before proceeding to puncture the bladder, although no doubt such cases occur.

The plan I adopt is to place the patient in a hot bath, give a large dose of opium (gr. iss. to gr. ij.) and employ a purgative enema. As soon as the bowels are open I order a suppository composed of opium, and a fourth of a grain of belladonna, to be inserted into the rectum: these means rarely fail to produce a flow of urine, which, even if it takes place but slowly, relieves the urgency of the symptoms, and gives time for the adoption of further means for the removal of the obstruction. This may be effected by four different methods—dilatation, caustic, puncture, and incision.

Dilatation should be first tried: it is effected by the catheter or bougie, or by injecting the urethra with water. In speaking, however, of this treatment of stricture, I wish to impress on your minds that something more is to be done beyond the mere mechanical removal of the impediment to the passage of the urine, and that the use of local remedial means should be judiciously combined with constitutional treatment; the latter consisting chiefly in the strictest observance of dietetic rules to the state of the bowels, and in the employment of such medicines as tend to diminish arterial action; such as blue pill with tartarized antimony, followed by slight aperients. Recent strictures may almost always be cured by this system of treatment, assisted by the gentle introduction of the bougie every other day, and even when the stricture has reached its more permanent form, its cure may generally be effected by following out this plan, and in passing the instruments without violence, as the object is not to force a passage through the stricture, but by gentle pressure produce a slight inflammatory action, in consequence of which, disintegration and absorption are likely to be induced. This plan was strongly recommended by Dupuytren, and I have followed it with very great success. The indication that the treatment is producing the desired effect upon the stricture is found in the appearance of a slight purulent discharge, and soon after this effect is first seen, the catheter will generally soon pass the obstruction. During the progress of the treatment the permanent stricture often becomes irritable,—just as irritable stricture is convertible into permanent; this is shewn by its tendency to bleed on attempting to pass a catheter, and by the pain which the slightest touch of the instrument produces; in such cases you will also find that if you succeed in passing the stricture, there will be considerable difficulty in withdrawing it, and it will generally be attended by bleeding. With these symptoms recourse must be had to sedatives, and also to the caustic bougie, which seldom fails to diminish the irritability, probably by destroying the sentient extremities of the nerves which had become exposed by the ulcerative changes the substance of the stricture had undergone. Some surgeons recommend the use of potassa fusa as the escharotic, instead of nitrate of silver. I believe it unsafe, however, on account of its deliquescence, which renders it much less manageable. In cases in which the stricture resists the gentle application of bougies, I have rendered the obstruction permeable by injecting tepid water into the urethra by means of a syringe furnished with a long canula. By repeating this operation the opening becomes dilated,—a condition soon made evident by the greater freedom with which the water enters; a bougie may afterwards again be had recourse to. It is somewhat remarkable, that after the introduction of the bougie, although no evident mechanical effect

has been produced by it, the patient finds that he can pass his water much more freely, and yet perhaps the instrument may not penetrate the stricture until some days after. Caustic is sometimes employed as a direct means of overcoming a stricture, the density of which is so great as to prevent its being acted on by simple pressure. The application of the escharotic produces a slight slough on the surface, and tends to soften the mass of adventitious matter, so as to render it better fitted for absorption. Some precaution is necessary in using the caustic bougie, and contact with any portion of the urethra besides the stricture must be carefully avoided. To secure this a larger instrument should be passed first to clear the way, as it were, for the cauterising bougie. Although I have attached great importance to the observance of extreme gentleness in the introduction of the bougie, circumstances may occur, in which it may be necessary to employ force to effect its entrance into the bladder; for it may happen that the symptoms of retention of urine may be so urgent, that immediate relief is imperatively required, and under such circumstances the forcible introduction of the catheter becomes not only justifiable, but may be an advisable measure.

If, in the attempt to introduce the instrument, it is found that it can be brought to a right angle with the body in its recumbent position, it will prove that the stricture is situated just at the junction of the bulb with the membranous part of the urethra, and then, in order to effect the introduction of the catheter into the bladder, the fore-finger of the left hand should be passed into the rectum; and when the point of the instrument is felt, as it may easily be, the handle must be depressed with moderate force, and the point may then be directed at once into the bladder. Some surgeons recommend that in such strictures the catheter should be thrust in with sufficient force to overcome the obstruction at all risks; but I am persuaded that this is bad practice, as the laceration of the canal, perforation of the prostate gland or rectum, are accidents very likely to occur; it is, therefore, better to puncture the bladder than to have recourse to such violence.

In cases where the catheter cannot be passed through the stricture, instruments have been employed for the purpose of cutting a passage: the instrument is composed of a kind of catheter with a concealed lancet, which is projected from its canula the moment it touhces the stricture. But it is so perfectly impossible to direct a sharp cutting instrument merely through the obstruction, without wounding the urethra itself, that I totally repudiate its employment, unless it be for the purpose of dividing a stricture placed anterior to the bulb, and consequently in the straight part of the canal.

If the nature of the stricture does not, however, admit of the use of the instrument, and the attempts at dilatation, by the gentle introduction of the catheter or bougie, injection of water, or application of caustic, have failed, and the patient be still suffering from retention of urine, or be in consequence of the straining threatened with ulceration of the urethra behind the stricture, puncturing the bladder must necessarily be resorted to. The operation may be performed either by making the puncture into the bladder through the rectum, or above the pubes, or by making an incision into the perineum. I have always had an objection to the operation per rectum; for, although it is performed with great facility, still you are interfering with the functions of an important organ, in addition to those implicated in the disease, and, moreover, you are only relieving the patient from the retention, without removing the cause of that evil. Some surgeons maintain that the stricture is much more readily cured when the urine is made to pass off by another channel, as it is then relieved, owing to its being no longer subjected to the pressure of the urine, or the irritating influence of constant attempts at micturition. My experience does not, however, lead me to this opinion, as it still requires much time to remove the obstruction; and during this period a canula or bougie, sufficiently long to protrude from the anus, must be left in the opening between the bladder and rectum; and as this instrument must irritate the rectum by its presence, it

would tend to produce a liability to permanent fistula. My colleague, Mr. Cook, has frequently performed the above operation in cases where immediate relief was necessary from the urgency of the symptoms of retention of urine; and the circumstance of his having repeated it, is, in my opinion, a sufficient guarantee for its expediency in certain cases. In the operation, the patient should be placed in the same position as in the operation for lithotomy: the fore-finger of the left hand must be passed up the rectum beyond the prostate gland, and upon the patient's coughing, the inferior region of the bladder may be felt pressing on the rectum. The middle finger should now be introduced, and a long curved canula passed on the fingers and pressed against the bladder, being at the same time held in such a direction that the extremity points towards the umbilicus. The trocar is next passed along the canula, and plunged into the bladder; on withdrawing which, the urine immediately follows.

[The bladder should never be punctured through the rectum without we are quite sure that it is really distended by urine, and that the prostate is not enlarged. The objection against this operation above stated, that it merely relieves the retention without curing the stricture, applies also to *puncture of the bladder above the pubes;* an operation which has also the further disadvantage that after its performance there is great liability to infiltration of urine. In consideration of these circumstances, Mr. Cooper says:]

When, therefore, a patient applies to you, who is the subject of difficulty in passing water, and of frequent attacks of partial retention, and you find it impossible to pass an instrument into the bladder, and that the symptoms are not relieved by warm-bath, opium, and such other remedies as have already been mentioned, and also that the stricture does not yield to the means employed for its dilatation, nor to the action of caustic, I believe the most advisable operation to be cutting through the stricture in perineo, as by this mode of procedure you not only radically overcome the obstruction, but at the same time relieve the retention of urine. It is true that this operation is more difficult than the others, but that in itself offers no reasonable objection to its adoption, if it actually affords more benefit to the patient. The cause of its frequent failure arises from the delay, which is allowed to produce great constitutional disturbance before the operation is had recourse to as a rational means of cure.

The operation of *dividing the stricture in perineo* is performed with the patient in the same position as in lithotomy: an instrument is passed down to the stricture, the grooved staff being perhaps the most appropriate to the purpose. An incision is next made in the perineum, commencing at the point where the end of the instrument can be felt resting on the stricture; the groove is then to be cut into, and the knife carried downwards with great caution, cutting the way for the point of the staff, which should be made to follow it as it gradually divides the stricture, and the staff, being pushed on, passes into the bladder. The staff should then be withdrawn, and an elastic gum catheter put in its place, and retained there for several days. I have generally adopted another plan for performing this operation, in consequence in most of the cases of fistulous opening in the perineum being concomitant with the stricture. Having made the incision into the perineum, instead of opening the urethra at the groove of the staff as before described, I have first opened the membranous parts of the urethra behind the stricture, and then passed a female catheter into the bladder, and drawn off the urine; thus relieving the patient of the retention, but having still to divide the stricture: this is effected by feeling within the wound for the point of the grooved staff above the stricture; and, proceeding to cut through the obstruction, carrying forward the staff as before described, (first, however, having withdrawn the female catheter,) the staff enters the bladder through the opening originally made for that instrument. The staff should then be withdrawn, and an elastic gum catheter inserted

in its stead: this should be left in for a week, when it must be removed, and substituted by a new one. At first, some urine will escape by the wound through the perineum, as in the operation for lithotomy; but generally in the course of a week or ten days it passes entirely through the catheter. About a fortnight after it has entirely ceased to flow from the perineum, the catheter should be removed, but still for some time the patient should regularly have the water drawn off, and this, if performed with gentleness, produces much less irritation than would be excited by the constant presence of an instrument in the bladder. I have, at the present time, a gentleman under my care, and ten days have elapsed since the above operation was performed, and the urine has ceased to flow from the perineum; but he continues to employ the catheter to evacuate the bladder.

I have performed this operation many times, both in public and private practice, and am convinced that if resorted to in an early stage of the disease, or immediately after the appearance of urgent symptoms, there are few cases in which it would not prove successful; but, on the other hand, in protracted cases, success is very doubtful. When a permanent stricture occurs in the urethra anterior to the bulb, and especially in that part of the canal covered by scrotum, it is not advisable to cut down upon the stricture from without, owing to the liability to infiltration of urine if the incision be made through the scrotum, and of the difficulty of healing the wound when the opening is made anterior to it. The cure of such stricture must, therefore, be assiduously attempted by the use of bougies or caustic, or should they resist this treatment, perhaps the instrument, furnished with a cutting stilette, employed by Mr. Stafford, may be used: as this part of the urethra may be rendered straight, the instrument may be directed with much more certainty than when the stricture is seated in the curved portion of the canal. I should myself, however, prefer opening the urethra behind the stricture, if retention demand it, rather than to puncture the stricture itself.—*Medical Gazette, Nov.* 24, 1848, *p.* 867.

119.—ON THE TREATMENT OF STRICTURE.—By Samuel Solly, Esq. F.R.S., Senior Assistant-Surgeon at St. Thomas's Hospital, &c.

[Relating a case as an illustration of the mode of treatment, Mr. Solly says:]

I took a moderate-sized sound, and, passing it gently down the urethra, found that there was some spasm, but not a great deal. Waiting a little, I moved it onward again, till I found it absolutely stopped. After removing it, I took a small catgut bougie, and, passing it gently down, soon found it quitting the natural channel and entering a false passage. Having now ascertained the direction in which this passage ran I then withdrew the bougie, gave the point a slight bend, and, passing it in again, feeling round the urethra for the pervious spot, but avoiding the false passage, I managed to hit it off; so that the instrument slipped into the bladder without using the least pressure or force.

This is the great secret in the use of the thread-sized catgut bougie: it must be handled most delicately, turned in the urethra, something like a cork-screw, till the hole through which the urine escapes from the bladder is pitched upon, and this is immediately felt by the instrument passing forwards without any sensation of obstruction. The catgut bougie must never be used with the idea of breaking down a stricture or pushing through it, but, if I may so express it, coaxing it into the bladder. Whenever you find the bougie spring back, you must stop and give it a little twirl between your forefinger and thumb; you may often have to work for half an hour or more in this way, without being able to hit off the opening; but patience and delicate handling will do a great deal. I assure you it is worth taking

some trouble to relieve a fellow-creature effectually of such a serious malady without the use of the knife. Having passed the stricture, and entered the bladder, I desired that the bougie should be retained there for an hour. I attach great importance to the retention of the bougie; and with the catgut bougie there is this additional advantage, that the bougie swells to twice its original size.—*Medical Gazette, Dec.* 29, 1848, *p.* 1089.

120.—ON CREEPING BUBO.—By SAMUEL SOLLY, Esq., F.R.S., &c.

[Mr. Solly observes that there is a form of venereal affection which has not received an exact name from systematic writers, and which he designates "creeping bubo." It is that intractable sore which arises when chronic syphilitic bubo proceeds to ulceration, unstayed by mercury. Mr. Solly says:]

Ulceration in the groin, following syphilitic inflammation of an absorbent gland, is often a most intractable kind of sore. I believe that it scarcely ever heals, without the employment of mercury. If its true character be recognized, when the surface which it occupies is small, and but a short time has elapsed from the first absorption of the poison, it is easily arrested by mercury. But if it has attained any size, and the system has been for some months under the influence of the poison, then it is one of the most difficult sores to heal in the whole range of surgery. It is then a long while before this mineral will arrest its ravages; and it is often necessary to desist from the use of mercury for some time, employing tonics, and return to it again.

If my views regarding this treatment be correct, it is unnecessary to dwell on the importance of distinguishing its character at the onset. This disease, in its most aggravated form, when it has existed some time, unstayed by mercury, presents a very peculiar appearance, by which it is easily distinguished. Its most striking feature is the manner in which it burrows under the skin, creeping onwards from place to place. This creeping character has induced me, for some time past, to designate it in my clinical observations, as *Creeping Bubo*. It often creeps upwards on the abdominal parietes, as high as the umbilicus; down the thigh, as low as the knee; round the thigh, to the anus; and over the buttock, nearly to the spinous process of the ilium.

The formidable nature of this ulcer is best seen in those cases where no mercury has been administered; for, in these, there is scarcely any attempt at the healing process. Some years ago, I had an opportunity of witnessing several cases of this kind occurring about the same time. Their extreme obstinacy astonished me. I saw every local application in the Pharmacopœia tried, but in vain. Mercury was not made use of, and they continued to extend. One case sank under the disease, apparently exhausted by its depressing effects.

The appearance which creeping bubo exhibits in its *early* stage, presents some peculiarities by which it may be distinguished. The surface of creeping bubo is of a yellowish color, the discharge is thin and ichorous, the edges are inverted, overlapping, corrugated, in dotted points, white, hard, and very irregular. In its early stage it is most like the strumous or scrofulous bubo, with its overlapping edges; but it differs, inasmuch as the edges of the strumous bubo are inverted, not everted, and soft, not hard and corrugated. The distinguishing marks, however, are not so easily described by the pen as by the pencil.

I was at first much surprised, in searching the records of surgery, to find so few clear and distinct notices of this formidable effect of the syphilitic poison. This most probably arises from the fact, that mercury was so extensively, and, as I believe, judiciously used in former days, that the poison

seldom remained so long uncontrolled, as to produce the form of ulceration in question.

Swediaur dwells, with his characteristic force, on those phagedænic and also scrofulous buboes, in which mercury is contra-indicated; but he does not describe any form of bubo which especially requires this medicine.

Mr. Pearson, in his Lectures on Syphilis, used to speak of this form of bubo in the following manner:—"Instead of bubo healing after the completion of a mercurial course, it sometimes happens, that a very painful ulcer remains, which occasionally spreads to the external part of the thigh, and in a contrary direction as far as the scrotum, or even to the anus. The ulcer is ill-conditioned, and attended with bad health, often resisting every mode of treatment that can be tried."

Mr. P. has encouraged the suppuration of the part; but, though it has poured out a greater quantity of matter, it has shewn no disposition to heal. He has used the actual cautery, has applied cicuta, oxymuriate of mercury, bark, sarsaparilla, and myrrh, without any perceptible advantage; in many cases he has given internally cicuta, sarsaparilla, opium, bark, decoctum Lusitanicum, muriate of baryta, chalybeates, compound lime water, blue and white vitriol, without essential benefit to the patient. He has recommended the patient to take chiefly raisins, and decoction of guaiacum; has varied the diet in every possible way; has tried the effect of pure air, exercise, rest, and confinement, but no particular advantage has ensued. Great attention, he says, must however be paid to the general health; the sore should not be stimulated, but kept easy without being relaxed. That mode of treatment is the most efficacious, which gives the least pain. The warm sea-bath, good air and exercise, with generous diet, promises most success. The cure must be effected by the efforts of the constitution. He says, "sometimes when a bubo is nearly healed, it becomes changed into an ill-conditioned sore, with jagged irregular edges; the ulceration begins to extend from some part of the ulcer, attended with a sensation of pruritus or tingling; and, though small at first, will spread so rapidly, as to reach almost across the body. The aspect of the sore is foul and irregular; its edges jagged and flabby, resembling a leaf that has been injured by caterpillars; when it occurs on the penis, it will sometimes extend to near the area of the pubis, entirely or partially destroying the integuments. In these cases, the patient's case must be consulted. Mercury will generally do considerable harm; muriate of barytes and sarsaparilla have been found most useful. The cure depends on the powers of the constitution, and the patient may ultimately do well. It is seldom very painful. Mr. P. has known the sore to run down the thigh to a great extent: he relates one case in which the disease lasted seven years. "These sores," he says, "will frequently baffle all your attempts. Do nothing to irritate: keep them clean and easy by ointment, containing the extract of lead, calomel with lime water, decoction of guaiacum; and these will keep them dry and easy. The cure depends on some particular and inexplicable change in the constitution; and when this has taken place, the sore will generally heal in a very short time." Mr. P. used to advise his patients to take no notice of it, but to go about as usual. One gentleman, with such a sore, took a tour of the Highlands!

That admirable champion of mercury, the late Dr. Colles, of Dublin, has noticed this disease, denominating it the *Horse-Shoe Ulcer*. He says, that "mercury, in general, does not serve this symptom; yet, in some cases, very minute doses of mercury will be found most useful in disposing the ulcer to heal." He then relates a case, which forcibly supports my views of the importance of the mercurial treatment; and affords decided encouragement to those who are disposed to continue its use, even under the most discouraging circumstances. (*Colles on the Venereal Disease*, p. 104.) Colles, however, does not say that these ulcers cannot be cured without mercury. On the contrary, he says, "I have seen them yield, though

slowly, to other treatment, and I have known some to have been made worse by the use of mercury." With all this I agree; but I am convinced that the cases, which are not benefited by mercury, are the exception to the rule, and are very few in number, and then only *when they have existed for a long time*. That mercury is the most powerful instrument we possess to arrest the disease, I can confidently assert, as the result of above fifteen years' careful observation. I believe that the sore scarcely ever attains any great size, if mercury has been judiciously and efficaciously administered, at the *onset* of the disease.

My attention was first called to this subject by my late valued friend Mr. Tyrrell. He considered, that nothing but mercury had any control over it. His observation made a great impression on me, because he was not in the habit of using mercury extensively, and he always desisted as soon as the primary sore, for which he ordered it, was healed.

In this form of syphilis, as in many of those truly called secondary, mercury is very useful up to a certain point; beyond which it disagrees with the system, making it necessary to abstain from it for a time. But, by waiting a few weeks, or even months, we may return to its use; and its efficacy is again exhibited, in the rapid improvement of all the symptoms.

London Journal, May, 1849, *p.* 439.

DISEASES OF THE SKIN.

121.—ON THE PATHOLOGY OF SKIN DISEASES.—By Dr. T. H. Burgess.

We must take a more comprehensive view of cutaneous maladies, and study this class of affections more in the light of *general* diseases than we have been accustomed to do, if we wish to arrive at an accurate knowledge of their nature; for daily observation proves that the study of diseases of the skin cannot be detached from that of general pathology, and of the many morbid conditions with which they have such numerous and varied relations. Indeed, it would be a grave error to separate certain cutaneous eruptions from lesions of other systems, when both derive their origin from the same cause, and are in reality but different symptoms of one and the same disease. The eruptive fevers and the syphilides, for example, are constitution diseases, or rather the sequels of constitutional diseases, and to view them in the light of special or local affections would be to mistake their nature altogether. Eruptions of constitutional origin, however, by long standing may sometimes assume a local character. Erysipelas and acne frequently supervene in cases of derangement of the uterine function. Strophulus is associated with the process of dentition. Urticaria, lichen urticatus, and several varieties of herpes, are often the results of a disordered condition of the digestive organs. Psoriasis and lichen agrius frequently occur during the process of gout and urinary diseases; and the hereditary nature of certain eruptions, as lepra, psoriasis, lichen, &c., is beyond all doubt. Unless we bear in mind, in our treatment of these eruptions, their intimate relation with the organic function, we are constantly liable to serious error. If, for example, we were to look upon these critical eruptions or discharges which occur at certain periods of life as *local* diseases, and attempt to suppress them by topical applications, it is unnecessary to add that serious consequences would result; whereas, if they are not interfered with, they will get well as soon as the equilibrium of the system is restored. The impetigenous eczema of infants, and those eruptions which occur at the periods of puberty and the turn of life, are examples of this kind. A knowledge of cutaneous diseases, in fact, implies familiarity with the general principles of pathology, and, above all, with the doctrine of the sympathies, with general infections, idiosyncrasies, the effects of regimen, and modes of life.

Medical Gazette, February 22, 1849, *p.* 315.

122.—ON THE TREATMENT OF ERYSIPELAS BY CONGELATION.—By Dr James Arnott.

The congelation or freezing of the animal textures produced by powerful frigorific mixtures, may be considered in its three-fold character of a remedy. a prophylactic, an anæsthetic, or preventive of pain in surgical operations.

Congelation is a remedy of many diseases affecting the nervous and vascular systems. Of external inflammation it is a certain. speedy, safe, and agreeable remedy. Certain, because wherever congelation can be produced, inflammation ceases. Every other remedy of inflammation, as blood letting, antimony, mercury, minor degrees of cold, &c., are more doubtful in their effects. Speedy, because congelation instantly arrests inflammation. The congestive state which sometimes succeeds, has nothing of the character of inflammation, and none of its consequences. Where the degree or duration of the refrigeration has been sufficient, or where the cause of the disease continues to operate. the inflammation will, after a considerable period, return; but a re-application of the remedy will again immediately arrest it.

Safe, because in no instance, of hundreds in which it has been employed, has congelation been productive of any injury or untoward effect. Congelation, in respect to its use in erysipelas, is what is termed a rational remedy. Its analogies with other acknowledged remedies of inflammation would recommend its employment in this disease. Much of the danger of the erysipelas which affects the face and neck unquestionably proceeds from the extensive and severe inflammation of the skin; and to the suppression of this the efforts of physicians have been directed. Now, as cold is a remedy of inflammation of admitted efficacy, it is reasonable to suppose that by subjecting the diseased tissue. and this alone, to a short application of a much greater degree of cold than has hitherto been employed, a greater depressing or antiphlogistic power may be exerted. Again, as experience would show that bleeding when it produces syncope is a more certain mode of checking inflammation than when it does not produce that effect, so severe cold or congelation, which, like fainting, checks the circulation of blood through the part subjected to it, may likewise be useful for the same reason, and under the same circumstances. The morbid action of the blood vessels being thus arrested for a time, the healthy circulation may, by the efforts of nature, be immediately afterwards restored. Such reasonings, however, are of little importance in comparison with the following facts:—

Case—Charlotte Shepherd, ten years of age, living at 17, New Dorset Street, became a patient of the Brighton Dispensary, on the 15th of Nov., 1848. When I first saw her, two days afterwards, there was much swelling and redness of the face, and the eyes were closed. Considerable fever was present, and, occasionally, delirium. She had been purged, and had taken antimonial and saline medicines without any mitigation of the symptoms.

I applied a mass of pounded ice and salt, by means of a flat sponge, to each side of the face, for about a minute, or until large patches of the skin had become white and hard, or, in other words, frozen. She did not complain of the application, but on the contrary appeared to obtain immediate relief. The salt was washed off the face, and the saline mixture ordered to be continued.

17th.—The erysipelas has extended to the neck, and has returned to one side of the face and the ear. Increase of delirium and of the general febrile symptoms. The frigorific was again applied as before to the inflamed surface, and with the same immediate beneficial result. To take a laxitive, and to continue the mixture.

18th.—The fever and delirium subsided towards the evening of yesterday. The swelling has now quite left the face, and nearly the neck. From this period the convalescence was rapid. Little medical treatment, besides at-

tention to diet, was deemed necessary during the remaining period of attendance.

[In two other cases similar treatment was adopted, a mixture of ice and salt in a bag of thin silk gauze being applied to one part of the inflamed surface after another, until large patches of the skin were frozen. In both these cases also, the beneficial effects of the remedy were immediate, and no ill consequences followed. In reference to some other applications of congelation, Dr. Arnott says:]

With respect to its remedial properties, I shall, on another occasion, give illustrations of the use of congelation in phlegmonous inflammations, chronic diseases of the skin, ophthalmia, &c.; and in certain neuralgic affections, including varieties of headache. Although headache may not often shorten life, it very often embitters it, by resisting every remedy that has been hitherto employed. In no disease have the efficiency, safety, and speedy operation of congelation been more conspicuous than in this painful affection; which appears, in many cases, to arise from a more or less permanently morbid state of the nerves of some portion of the forehead or scalp. *Medical Gazette, March* 9, 1849, *p.* 405.

123.—ON PRURIGO.—By Dr. T. H. Burgess.

[Dr. Burgess is of opinion that the papular eruptions of Willan, (which Dr. B., like Alibert, would reduce to the single genus, prurigo,) are true *neuroses* of the skin; and that though other structures may be secondarily involved, the primary disorder is in the cutaneous nerves. He makes the following practical remarks on these diseases:]

A variety of the dry form of chronic *eczema* is very commonly indeed mistaken for the papular disease, and treated accordingly; hence, in great measure, the difficulty so generally complained of, of arresting the progress of that troublesome complaint. Eczema being purely inflammatory lesion involving the whole structure of the cutis, must necessarily demand a different method of treatment to a disease which is not the result of inflammation, and in which only one of the tissues (the nervous) comprising the cutaneous envelope is mainly and primarily implicated. In accordance with this view of the elementary nature of the papular diseases of the skin, I have been lately in the habit of prescribing strychnia and phosphorus in those distressing cases of prurigo which reduce the unhappy patient to the most abject state of human suffering, and too often baffle the usual methods of treatment prescribed in works on cutaneous pathology. In several cases of this kind, and after the acids, alkalies, and arsenic internally, and hydrocyanic and acetic acids in the form of lotion, had utterly failed to subdue the increasing pruritus, I have found the phosphorated ether to succeed, given internally and preceded for a day or two by repeated doses of the tincture of hyoscyamus.

In the prurigo of old age, I have also seen it succeed in allaying the tormenting itching and tingling, after the usual remedies had failed. Can it be a reviving effect which phosphorus produces on the nervous centres that causes this alleviation of the pruritus? As the proportion of phosphorus in the young and healthy human brain is considerable, being from eight to eighteen parts in one thousand of the whole mass, or from one-twentieth to one-thirtieth of the whole solid matter: and as it is unusually dificient in idiots and in extreme old age, the loss of so necessary an ingredient of the nervous mass may occasion the irritation in the peripheral nerves which constiutes prurigo senilis. This is evidently a lesion of innervation, associated with decrepitude, and a sure indication of the gradual disintegration of those structures and functions through whose combined agency the process of life is carried on.

But why should there not be neuroses of the organ of touch, or of

the skin, as well as the organs of sight, hearing, smell, and taste? It is not because the "hallucinations of the sense of touch," as the French pathologists call those morbid conditions of the skin which come under the heads of *hyperæsthesia* and *anæsthesia*, are so difficult of explanation, that we are to deny their existence. There is no doubt but several of those cutaneous disorders which we have been accustomed to regard as the result of inflammation, in consequence of placing an undue reliance on their *secondary* products, as a means of diagnosis, are in reality lesions of the cutaneous nerves, producing exaltation, or other modification in the sensibility of the skin.

A young woman, aged twenty-six, placed herself under my care suffering from a distressing pruritus, which tormented her day and night. She had been afflicted with the disease nine months previously, and for three or four months at a time she could not sleep in bed, being obliged to pass the night on the sofa with her clothes on, from which she was frequently obliged to rise and walk about the room to seek relief from the itching. The disease was situated principally on the lower extremities, whence it extended to the pudendum. It appeared in paroxysms which were in general preceded by a tingling sensation in the parts. There was no eruption or lesion of any kind to be seen on the skin between the paroxysms, except those produced by the finger-nails during the attack, in the attempts to get momentary relief. The patient could not resist the desire to scratch the parts until the skin became lacerated, although fully aware that by so doing she only aggravated the evil, and rendered the parts so painfully sensitive that she could not bear her clothes to touch them.

This patient had been treated at different times during the period she was suffering from the disease, for stomach complaint, disorder of the womb, and nettle-rash, which were indifferently supposed to have been the causes of the cutaneous affection. There was little or no relief obtained from the treatment pursued, and in one instance an aggravation of all the symptoms was occasioned by the application of Fuller's earth to the diseased surface. I prescribed the mineral acids, alkalies, with occasional doses of morphia, with, however, only temporary benefit. Seeing that the disease was decidedly paroxysmal, and that there were intervals distinctly marked between the exacerbations, when there was no pain and nothing to be seen but the scratches before mentioned; and not being aware of any *inflammatory* lesion presenting those characters, I treated the disease as neuralgia involving the peripheral nerves, and accordingly prescribed strychnia,—the sixth part of a grain twice a day to begin with, which was soon increased to one-fourth of a grain. The patient, at the commencement of the treatment, took occasional doses of the tincture of henbane, but no external agents were had recourse to, further than the ordinary measures of cleanliness. In the course of three or four weeks this patient was so far improved in her health that she could sleep soundly, and in her bed, relish and digest her food well, and perform the ordinary avocations without being interrupted by her old and tormenting disease.

Medical Gazette, April 6, 1849, p. 595.

124.—ON THE TREATMENT OF SPECIFIC ULCERS.—By G. Critchett, Esq., Assistant Surgeon to the London Hospital.

[In a continuation of the series of lectures on the treatment of ulcers, from which we made extracts in our last volume, Mr. Critchett treats of *specific* ulcers. And first of the *strumous* ulcer, Mr. C. says:]

The strumous ulcer is the most difficult to manage. While there remains a mass of strumous deposit in the wound, of course it acts like a foreign body, and prevents the healing process from proceeding; art may be brought to the aid of nature in expediting its removal. Should the external opening

be small in proportion to the strumous mass within, it may be enlarged with advantage. When two wounds communicate beneath, they should be laid into one; the red precipitate powder, or some strong escharotic, as the potassa fusa, will hasten the removal of the morbid deposit. This latter is, however, a very severe method, particularly in a weak strumous patient, and one to which I have very rarely felt justified in having recourse. When the strumous enlargement is just forming beneath the skin, I have found advantage from painting it over either with the tincture of iodine or the solid nitrate of silver; a weak solution of iodine is also a very valuable application to strumous sores in the form of a lotion; other stimuli, particularly the lotio nigra are often useful.

In that form of phagedænic ulcer which spreads in one direction and heals in another, it is sometimes advisable to destroy the peccant edge with some powerful escharotic, as nitric acid. In these cases where there is extensive burrowing in the cellular tissue, this would be a very severe method, and I think it quite unnecessary. It is a much better plan thoroughly to saturate small strips of lint with black wash, and with a probe thrust them to the very bottom of the wound, so as to bring the black powder into contact with every part of the ulcerated surface. In these undermining phagedænic sores, I have met with no application at all comparable to the black wash, when properly used; if it is left to the patient or a nurse it invariably fails. Having then selected what I deem a suitable specific local remedy for these cases, and having got rid of any slough or strumous deposit that may exist, I always superadd mechanical support, and my case-book and hospital experience bear ample testimony to the advantage of this combined plan, both in effecting a cure and in preventing relapses: either is insufficient of itself, but when the special character of the sore is met by a proper application, and the feeble vessels of the limb are restored to a healthy condition by strapping, a quick and lasting cure is usually established. These specific cases generally bear the support rather tightly applied, more particularly if the leg feels soft and doughy; but the same rules I have already laid down on this subject are equally applicable in these forms of the disease.

[A suitable course of medicine and generous diet are accessories in the treatment which must not be omitted. Mr. Critchett next proceeds to speak of the *menstrual* ulcer. He says:]

There are two or three modifications of this disease met with in practice; thus you have a class of cases, in which, the uterine function being entirely suspended, the system finds relief in a constant discharge from the surface of a sore, which discharge is altered in quality and increased in quantity at the usual monthly period. In other cases the uterine function is performed, but the sore becomes inflamed and painful, and increases its amount of discharge at that period; thus giving evident signs of sympathy and co-operation with the uterus. There is, again, a peculiar and very formidable class of sores, which occur either at the period when, in the natural course of things, the menstrual function is about to cease; or where, from some organic change in the menstrual organs, this discharge no longer takes place.

The first form of this disease to which I have alluded, and which may be distinguished as "the true menstrual ulcer," occurs generally in young females, soon after the age of puberty. It is often, in the first instance, of a strumous character; or it may have arisen from some external injury. The uterine function not being very fully and regularly established, by degrees it ceases, and its place is supplied by the ulcer.

I have invariably found that the breaking out of the sore has preceded the suspension of the menstrual discharge, or has been first formed prior to that period of life when the function of the uterus commences. I note this especially, because it is an important element in the consideration of the treatment of these cases. The appearance of the ulcer is characteristic of its nature: it is generally rather large, its edges are ragged, its surface is ir-

ritable, dark-coloured, and exhibits specks of blood; the surrounding parts are of a deep red-colour, but not much swollen; the discharge is thin, and often mixed with blood; the pain and soreness are generally distressing, and much aggravated at the period when the uterine function is due. When this vicarious discharge is fully established, the disease becomes most intractable. I have met with cases that have existed above three years, having resisted all the ordinary methods of treatment adopted on these occasions.

It becomes, then, an interesting inquiry, as to how we can best succeed in stemming this cruel and obstinate invasion of the young and delicate of the weaker sex. If we consult surgical authorities on this subject, we invariably find the matter rather briefly dismissed, somewhat in the following way: "Restore the healthy functions of the uterus, and then the ulcer will heal." This sounds very rational and very proper, and no doubt answers exceedingly well when it can be accomplished; but, according to my experience, it is always difficult, and very frequently impossible. I have known cases, in which all the usual means of bringing about the healthy and regular uterine function have been carefully persevered in for a considerable period, and that, too, by very experienced and skilful practitioners, without success. Reasoning from this fact, and observing, at the same time, that the ulcer precedes the uterine derangement, I contend that it is scientifically more correct, and practically far more efficacious, to adopt a method the very converse of the one I have above stated—viz., "Heal the ulcer, and the uterine function will speedily be restored to health and regularity." I should pause ere I ventured to put forth this axiom, so opposed to everything that has hitherto been said upon the subject by so many and such high authorities, had I not repeatedly put this plan to the test of experiment, and with uniform success.

I commence, then, at once to attack the ulcer. Some stimulus is often useful in allaying the irritation; a solution of the nitrate of silver is generally the best. I then apply strapping rather tightly; for I find in all those cases in which I have, as it were, to compel a cure in spite of the rebellion of the constitution, rather tight and very accurately applied support is necessary, more skill being here required than in common and simple cases. Though you may feel confident of ultimate success by means of this plan, it is necessary to bring with you, in the treatment of such cases, a more than usual amount of patience, and a full share of confidence in the power of your remedy. Rest is quite useless here, even in obtaining a healthy surface to begin upon. You must therefore commence at once with your strapping, in the manner I have described. As the discharge is copious, it should be applied frequently, either alternate days, or every day. The wound will soon take on a healthy action, and begin to heal, and you will naturally suppose the cure is at hand; but as the monthly period approaches, in spite of all your efforts, the aspect of the sore changes, the discharge again becomes thin and copious, and much of the improvement that has taken place during the previous month is lost. You must not be discouraged by this, but must start again, and each month you will find you gain more than you had previously lost, until, at last, you succeed in entirely closing the wound, and then you are safe; the ulcer being healed, the uterus spontaneously resumes its healthy and regular function—at least, such has been my experience. But even suppose such a result should not invariably occur, you have then a simple case of amenorrhœa to deal with, which is surely far more easily controlled when uncomplicated with a vicarious discharge from an ulcer in the leg.

[With regard to the third variety of menstrual ulcer described by Mr. Critchett, namely, that occurring about the time of the cessation of the menstrual function, the sore may be cured without difficulty in the same manner as the others. But care should be taken, before healing it, to get a freely-

discharging issue made; for in two cases in which this precaution was neglected, Mr. Critchett observed that the patient died a short time afterward.]
Lancet, *Dec.* 16, 1848, *p.* 661.

125.—ON THE TREATMENT OF INDOLENT ULCERS.—By H. T. CHAPMAN, Esq.

[Mr. Chapman treats indolent ulcers by compression, combined with the application of cold; ascertaining, first, the temperature calculated to stimulate the dilated capillaries, without depressing too much the vitality of the part, and then maintaining such a temperature uniformly. Mr. C says:]

As soon as all inflammatory action has been subdued by emollient and antiphlogistic measures, these may be advantageously exchanged for cold water dressing and support, applied in the following manner. The sore being dressed with a compress of lint dipped in cold water, folded once, twice, or three times, according to the degree of compression which the surgeon may deem suitable to the case, three or more moistened strips of linen or calico, about two inches and a half in width, are to be carried smoothly round the leg. These strips must be applied precisely in the same manner as the strapping recommended by Mr. Baynton; the middle of the first strip being placed upon the back of the leg, with its upper edge opposite to the lower margin of the ulcer, the ends are brought round to the front, drawn firmly, and laid down smoothly one over the other; the second strip must cover the upper third of the first; and the same proceeding must be followed with as many strips as the size of the ulcer may require. Over the strips, a calico bandage is applied, the greatest attention being paid to its equable adjustment, so that the compression be distributed evenly over the entire surface, and its amount regulated by the sensibility of the ulcer.

Where the leg is slender above the ankle, the roller is apt to fall into plaits, and furrow the skin; to guard against this inconvenience, the hollows immediately above the malleoli should be filled up by compresses of lint. The whole is then to be soaked with cold water and the moistened bandage enveloped with a sheet of oil silk, re-opening it from time to time, to renew the cold affusion. The wet strips of linen adhere to the limb, even before the application of the bandage almost as closely as adhesive strapping, and are capable of affording a support, scarcely inferior to that derived from it. In the case of a gentleman, whose legs were extremely bulky, and where they were applied from the toes upward, after the mode of strapping the leg followed by Mr. Scott, the patient was in the habit of removing the roller in the afternoon, and drawing a silk stocking over the strips of linen, trusting solely to the support afforded by them until the following morning. If the ulcer secretes abundantly, it is better at first to repeat the dressing daily, although lint will absorb much of the discharge; very shortly, however, under the action of cold, large, shining, semi-transparent granulations become compact and red, and a thin and copious secretion diminishes in amount and improves in quality, rendering a daily renewing of the dressings quite unnecessary; and, after a time, this necessity becomes still more rare; in several of the cases hereafter recorded, an interval of three, four, and even five days sometimes elapsed between each dressing, without any interruption to the onward progress of the ulcer.

The frequency with which the cold affusion is practised must be regulated by the temperature of the part, and the state of the patient's feelings; heat, uneasiness, and irritability being at once relieved by it; the age and temperament of the patient, as well as the season of the year, must also be taken into consideration. In proportion as the ulcer advances towards cicatrization, it is required much less frequently, and in the last stage of the cure may often be altogether dispensed with.

In the early management of very deep ulcers, I have found it requisite to

modify the water dressings as follows: unless the cavity be filled up to the level of the surrounding skin, and its surface participate in the support given to the rest of the limb, granulations rise very slowly from the depth of the sore; successive layers of lint, according to Mr. Whateley's practice, or scraped lint—the *charpie rappee* of French surgeons—were not, I found, well adapted either to absorb the discharge, or to imbibe the water, and convey it freely to the deeper portions of the surface; in fact, such a mass soon became as impenetrable as an unctuous dressing.

Instead of lint, therefore, in such circumstances, I make use of soft sponge, torn up into very small shreds, and soaked in water; these are dropped lightly into the ulcer, and covered with a single layer of lint, over which the bandage is carried, as in shallow sores; gentle support being thus conveyed to the entire surface, and tone communicated to the minute vessels, granulations spring up uniformly and vigorously, and fill the hollow of the ulcer, often with surprising rapidity. The sponge acts, as far as its compressing power is concerned, on the same principle as the wax dressing poured into deep ulcers, in the manner suggested by Mr. Stafford; according to my experience, it is only a more convenient mode of effecting the same object, but accomplishes it more speedily and completely. The shreds of sponge should be well soaked, and lightly distributed, in order to avoid any ill consequences from too much pressure by their subsequent expansion.

Under this simple plan of treatment, I am satisfied that the granulation and cicatrization, in a large majority of cases of indolent ulcers of the leg, of long standing, even when attended with a high degree of irritability, will proceed more favorably and expeditiously, and occasion less inconvenience to the patient, than under any other method whatever.

Brit. and For. Med. Chir. Rev. Jan., 1849, p. 209.

126.—A NEW MODE OF REMOVING NÆVI.—By J. C. CHRISTOPHERS, Esq.

[Mr. Christophers described the following method of removing nævi, four years ago; and further experience, he states, confirms his opinion of its efficacy. Mr. C. says:

It requires merely a needle and a piece of waxed silk for its performance, which may be divided into two stages. 1st. That in which the ligature is passed; 2ndly, that in which the nævus is strangulated, and may be described as follows: Take a piece of strong silk, well waxed, about half a yard long, and dip the moisty of it in ink to dye it, the more readily to distinguish the ends after it is divided; thread a needle with the same, leaving the ends equal and pass it under the centre of the part to be removed. This done, cut the ligature in the middle, leaving the needle attached to the inferior or black half of the ligature; take the same and pass it through the skin immediately below the part to be strangulated. Thread the needle with the superior or white half of the ligature, and pass it through the skin in an opposite direction to the black ligature, immediately above the part to be strangulated. Remove the needle.

2nd stage.—Tie tightly the two ends of the black loop that includes the inferior half of the nævus. Tie in the same manner the two ends of the white loop that includes the superior half of the nævus. The four ends remaining, two black and two white, are now to be tied alternately and tightly, the one to the other, and the operation is completed. The whole mass to be removed is by this means completely and entirely enclosed in a double circle, both from within and without, and is most effectually and permanently strangulated.

Medical Gazette, Dec. 1, 1848, *p.* 935

127.—CASE OF NÆVUS OF THE LIP TREATED BY LIGATURE.—Reported by H. Welch, Esq.—Jan. 4th, 1848.

W. F., aged twenty-three, bricklayer, was admitted under the care of Mr. Luke, desiring to be relieved of the incumbrance arising from an immensely enlarged lower lip, caused by a nævus which had existed from his earliest recollection. An attempt was made by Mr. Luke, in 1843, to arrest the development of this disease by the passage of a series of threads through the swelling, which, having caused considerable inflammation, was attended by temporary success. Of late, however, the lip has rapidly and enormously increased, and has given rise to very great annoyance, both in speaking and taking food. There is also extensive discolorations of the skin over the lower part of the face, the neck, and upper part of the chest: but this is not in progress of extension, and gives no inconvenience.

For the purpose of removing the large mass of diseased lip, Mr. Luke adopted the following proceeding:—A ligature, three yards in length, was armed with nine curved needles, which were placed about twelve inches apart from each other. The first needle was passed through the lip from its inside, near the left angle, a little beyond the limits of the tumour; the second through the lip, a little distance to the right; the third about the same distance, still more to the right; and so on with the other needles, until the right angle was reached, the last needle being passed a little beyond the tumour on the right side. In this way seven of the needles were used; the remaining two being unnecessary, were removed. The needles were next cut off, and eight loops of ligature were thus left. Upon tying exteriorly, the ends of the loops with each other, tightly, the whole of the tumour was insulated from the surrounding parts, and its circulation stopped. This was done most effectively, by reason of each ligature embracing a small portion only of the lip—a proceeding which had the additional advantage of not producing any puckering or drawing-in of the lip.

[The after-treatment consisted chiefly in opening the tense insulated part of the tumour with the lancet, and the application of opiate lotions: aided by these means the operation was quite successful.]

Lancet, Feb., 17, 1849, p. 174.

128.—ON THE TREATMENT OF CANCER OF THE LIPS.—By Dr. W. P. Brookes, Cheltenham.

[Dr. Brookes applies the chloride of zinc in these cases. He says:]

I have within the last four years, had two cases under my treatment, in which the upper lip was the primary seat of the disease, and three in the lower lip: short notes of each case I now append.

F. S., aged fifty-four, residing in Cheltenham, had suffered some time from a scirrhous sore, with everted edges, and discharging a most offensive odour, in the upper lip: this had once been extirpated, but it reappeared in a few months afterwards. In February last he consulted me: I then found him with the whole of the upper lip involved in a large cancerous sore, giving out so disagreeable an odour, that the room in which he resided was barely to be tolerated. This sore also extended into the cheek on the left side, and up to the border of the eyelid, by its pressure closing the lower eyelid, so that he could not see with the left eye. It had also opened into the ductus stenonis: there was no enlargement of any of the glands. He would not hear of any operative procedure; and the sore was dressed with chloride of zinc and gypsum, but with no other effect than, in a great degree, removing the disagreeable odour. In a short time the general health gave way, and he removed into the country for change of air, so that I lost sight of him, but doubt not, the case has terminated in death long ere this.

Mrs. Fitzgerald, aged sixty, washerwoman, residing in Taylor's court, has had a cancerous growth of the right side of the upper lip for two years.

In March, 1848, she came under my notice. I found her with more than half of the upper lip in an ulcerated state, extending down the cheek to the chin on the right side, saliva constantly dribbling away; the parotid and submaxillary glands enlarged and diseased; the ulcerated surface unhealthy; edges everted, and giving out an offensive cancerous odour; general health in a very bad state; and this gradually becoming worse, she died in a few weeks after my first seeing her.

Jesse Castle, aged forty-two, a strong, healthy-looking man, came under my care with a scirrhous sore of the lower lip and centre of the chin, the size of a five shilling piece; no enlargement of glands, and general health very good. He attributed the first origin of the disease to an impoverished diet. After three applications of chloride of zinc and gypsum, healthy action was set up in the sore, and it quickly healed. I have been in the habit of seeing this man almost daily since he recovered, now more than four years back, and he continues free from any return of the disease.

W. B. aged forty-eight, residing in Cheltenham, was admitted a patient of mine on the 1st of July, 1848. Has now a sore, the size of a half-crown in the centre of the lower lip, with everted edges of a scirrhous nature. At the lower part of the sore was a hard red tumour, the size of a nut, and very painful to the touch. Two months back, this portion of the lip was removed by a surgeon for a cancerous growth; the edges of the wound united well, but the disease again appeared very rapidly after the operation; there is no glandular disease; the patient positively refuses to have the knife again used. This is a very favourable case for the use of chloride of zinc, which is now being applied, and I doubt not will give him some benefit.

I have seen the chloride of zinc exert a most beneficial effect in cancerous sores, and those in which the malady has taken too great a hold on the constitution, assisting, in a great measure, to overcome the offensive odour of the disease. It also exerts a good effect in stubborn ulcers, especially with callous, hard, everted edges, and will rapidly set up a healthier action when other remedial means have failed; the surface will speedily granulate and heal.

The mode in which I use the remedy is, by taking two parts of chloride of zinc, and three parts of gypsum, spreading the powder over the surface of the sore, protecting the edges of the healthy skin with vinegar, and applying in about a quarter of an hour a soft poultice.

Medical Times, Dec. 30, 1848, p. 196.

129.—ON TRAUMATIC GANGRENE.—By J. P. Vincent, Esq.

[Mr. Vincent would not amputate for traumatic gangrene. He would give food when the stomach can bear it, and stimuli if required.]

I am convinced (he says) that by adopting this course, of watching the expressions which the constitution shows during the first three or four days of the first stage of very serious injuries, and by throwing in brandy, when the indications demand it, that there can be no occasion to amputate on account of traumatic gangrene.

The cases which M. Larrey represents to have been saved by amputation were actually rescued from death by the administration of brandy. This liquor, in fact, he regards as the great resource for sustaining the action of the heart in these circumstances, and beyond all comparison the best means. Some years ago, he states that he tried the comparative efficacy of brandy and ammonia; and the superiority of the former was marked and distinct. Ammonia, he thinks, impairs the action of the stomach more than any other agent. This impairment is the very thing to be avoided, and what is required, is to make the functions of the stomach and the circulating system go on with some degree of energy, till, in the struggle between

the disease and the constitution, the latter shall get the superiority. Ammonia also impairs the secretions, and in so doing causes great evil. To maintain them in such circumstances, Mr. Vincent recommends the use of mild preparations of mercury with antimony. At all times where the secretions are bad, it is necessary to keep up regular evacuations, which he maintains not to be weakening, according to the recent doctrines of some speculative innovators, but which he knows to be necessary for preserving health.

Edin. Med. and Sur. Jour., Jan. 1849, *p.* 173.

130.—CONCLUSIONS RESPECTING HOSPITAL GANGRENE.—By G. J. Guthrie, Esq., F.R.S., &c.

First.—Hospital gangrene never occurs in isolated cases of wounds.

Second.—It originates only in badly-ventilated hospitals crowded with wounded men, among and around whom cleanliness has not been too well observed.

Third.—It is a morbid poison remarkably contagious, and is infectious through the medium of the atmosphere applied to the wound or ulcer.

Fourth.—It is possibly infectious, acting constitutionally, and producing great derangement of the system at large, although it has not been satisfactorily proved that the constitutional affection is capable of giving rise to local disease such as ulcer; but if an ulcer should occur from accidental or constitutional causes, it is always influenced by it when in its concentrated form.

Fifth.—The application of the contagious matter gives rise to a similar local disease, resembling and capable of propagating itself, and is generally *followed* by constitutional symptoms.

Sixth.—In crowded hospitals the constitutional symptoms have been sometimes observed to precede, and frequently to accompany the appearance of the local disease.

Seventh.—The local disease attacks the cellular membrane principally, and is readily propagated along it, laying bare the muscular, arterial, nervous, and other structures, which soon yield to its destructive properties.

Eighth.—The sloughing of the arteries is rarely attended by healthy inflammation, filling up their canals by fibrine, or by that gangerenous inflammation which attend on mortification from ordinary causes, and alike obliterates their cavities. The separation of the dead parts is therefore accompanied by hemorrhage, which in large arteries is usually fatal.

Ninth.—The operation of placing a ligature on the artery at a distance, or near the seat of mischief, does not succeed, from the incision being soon attacked with disease, unless it has been arrested in the individual part first affected, and the patient has been separated from all others affected by it.

Tenth.—The local disease is to be arrested by the application of the actual or potential cautery. An iron heated red-hot, or the mineral acids pure, or a solution of arsenic or of the chloride of zinc, or other caustic which shall penetrate the sloughing parts, and destroy a thin layer of the unaffected part beneath them.

Eleventh.—After the diseased parts have been destroyed by the actual or potential cautery, they cease in a great measure to be contagious, and the disease incurs less chance of being propagated to persons having open wounds or ulcerated surfaces. A number of wounded thus treated are less likely to to disseminate the disease than one person in whom constitutional treatment alone has been tried.

Twelfth.—The pain and constitutional symptoms occasioned by the disease, and considered as distinct from these symptoms which may be dependent on disease endemic in the country, are all relieved, and sometimes

entirely removed, by the destruction of the diseased surface; which must however, be carefully and accurately followed to whatever distance and into whatever parts it may extend, if the salutary effect of the remedies is to be obtained.

Thirteenth.—On the separation of the sloughs, the ulcerated surfaces are to be treated according to the ordinary principles of surgery. They cease to eliminate the contagious principle, and do not require a specific treatment.

Fourteenth.—The constitutional or febrile symptoms, whenever or at whatever time they occur, are to be treated according to the nature of the fever they are supposed to represent, and especially by emetics, purgatives, and the early abstraction of blood if purely inflammatory, and by less vigorous means if the fever prevailing in the country is of a different character.

Fifteenth.—The essential preventive remedies are separation, cleanliness, and exposure to the open air—the first step towards that cure which cauterization will afterwards in general accomplish.

Lancet, Dec., 30, 1848, *p.* 715.

131.—HOW TO PREVENT PITTING FROM SMALL-POX.

[Dr. Ranking suggests the application of collodion to the face in cases of small-pox, to prevent pitting.] *Lancet, Jan.* 13, 1849, *p.* 50.

132.—ON SOLUTIONS FOR PROTECTING THE SKIN AGAINST CONTAGION. By W. Acton, Esq.

[The author states that he has been engaged in performing various experiments with solutions of gun cotton, gutta percha, and caoutchouc, with a view of testing their property of protecting the surface from the influence, by contact, of contagious poisons, and the following are the conclusions at which he arrived: 1. That a solution of gun cotton, when dry, corrugates the skin too much to be available for the purposes required. 2. That gutta percha alone is devoid of elasticity and sufficient adhesive quality, what the solution of caoutchouc wants body and is too sticky, but that—3. The compound solution of caoutchouc and gutta percha possesses the requisite qualities to fulfil the purpose required. It is prepared by adding a drachm of gutta percha to an ounce of benzole, (the volatile principle of coal naphtha,) and ten grains of india rubber to the same quantity of benzole, each being dissolved at a gentle heat, and then mixed in equal proportions. The author has employed this compound in painting the surface surrounding a chancre, with the solution, and found that the acrid secretion had no effect upon it when dried, and warm or cold water may be applied with impunity. He considers that it may be employed advantageously in many and various ways, as in protecting the hands during post-mortem examinations, in preserving the cheek from excoriation in gonorrhœal ophthalmia, and in covering the parts contiguous to a sore where water-dressing is the application, &c. A letter from Mr. Quekett to the author states the results of that gentleman's examination of these several solutions under the microscope. A dried film of the compound is described by him to be perfectly elastic and free from perforations though in many parts less than the 1-500th of an inch in thickness.

Lancet, Nov. 25, 1848, *p.* 589.

133.—REMEDY FOR BALDNESS.—By Dr. Neligan.

As a remedy for baldness which follows herpes or pityriasis, Dr. Neligan

recommends the following pomade, from which he has found great benefit. Prepared lard, two ounces; white wax, two drachms; melt together, remove from the fire, and when the mixture is beginning to thicken, add, with constant stirring, balsam of tolu, two fluid drachms, and oil of rosemary, twenty minims. In very chronic cases, or where the baldness has long existed, a drachm of tincture of cantharides may be added.

Medical Gazette, March 16, 1849, *p.* 483.

DISEASES OF THE EYE AND EAR.

134.—ON THE TREATMENT OF FISTULA LACHRYMALIS.—By W. White Cooper, Esq., Surgeon to North London Eye Infirmary.

[In order to show the disadvantages attending the practice of leaving a canula in the nasal duct, Mr. Cooper relates a case in which a patient was rendered miserable for years, by reason of a tube impacted there, and which he was at length enabled to extract. Respecting the treatment to be adopted in cases of lachrymal obstruction, Mr. Cooper observes:]

It is very important, when consulted by a patient labouring under obstruction of the lachrymal duct, to ascertain the condition of the mucous membrane of the nostril. This, especially in strumous subjects, will often be found thickened, congested, and ulcerated. The obstruction to the passage of the tears may, in such a case, arise either from the closure of the lower orifice from this condition of the schneiderian membrane, or from the extension of the morbid changes into the duct itself.

Under these circumstances, much benefit will be derived from the use of an ointment composed of three parts of the unguentum hydrargyri ammoniochloridi, to one part of oil of almonds. This should be applied with a camel-hair brush, and well swept over the membrane of the nostril. A lotion of four grains of nitrate of silver to an ounce of distilled water, applied in the same manner, is also frequently of great service. But with such measures, careful attention to the general health should be combined.

On several occasions I have seen much embarrassment caused during the operation for fistula lachrymalis, by the difficulty of finding the orifice of the duct with a probe or style, after the sac has been opened and the knife withdrawn. This will be obviated by making the incision with a narrow-bladed knife, which should be passed into the mouth of the duct; a fine probe should then be slid along the blade into the duct, and the knife withdrawn. The probe will at once guide the style into the duct, and the operation be completed. *London Journal of Med., April*, 1849, *p.* 333.

135.—ON THE ABSORPTION OF BLOOD EFFUSED INTO THE EYE.—By Wm. Bowman Esq., F.R.S., &c.]

It is a wonderful thing to see blood which has been poured into the aqueous chambers by some accidental blow upon the eye, disappear in the course of a few days by solution in the aqueous fluid and absorption. If the organ escapes active or disorganizing inflammation, a week or ten days are often sufficient for the removal of blood which has nearly filled the chambers; but something even then will depend on circumstances. If the blood has coagulated into a firm clot, its absorption is retarded. I had recently a case in which a young man had an injury to the eye late in the evening, but soon after went to bed and slept soundly. When I saw him next morning, I observed that he had been sleeping on his right side, for the blood had formed a clot, occupying about the right two-thirds of the chamber, and bounded by a very sharp but somewhat concave or cupped edge, placed vertically. It was remarkable that the iris (at least the un-

covered portion of it) remained freely moveable. When the pupil was contracted by a strong light, he was blind with this eye, but the eclipse of the pupil became only partial when he turned with his back to the window, so as to dilate it in concert with the opposite one, and he could then see. This clot was absorbed in about a fortnight. On the other hand, when the blood is diffused through the aqueous humour, by frequent change of posture, during the period when it might coagulate, it does not form a solid clot, and is more speedily absorbed, sometimes, if in small quantities, in three days.

I imagine that the blood in such cases mixes with, and its red particles swell, and give up their colouring matter to, the aqueous humour as they would to water, and that this is the occasion of their very rapid disappearance; for a most remarkable difference is noticeable between the result in these instances, as compared with those in which blood escapes into the chambers, when they are already occupied by yellow serum, the consequence of pre-existing disease. For here the blood may remain for many months almost entirely unchanged, either in color of quantity, just as it might do in a bottle of serum, excluded from the action of the air. The serum does not dissolve the red particles nor the coagulated fibrin, how then could we expect these to be absorbed? Nevertheless, a very slow change does go on; some slight differences are constantly taking place between the variable serum of the blood, and that occupying the chamber, owing to which a very gradual interchange is wrought between them, and the clot becomes paler. I have watched a small clot during six months, under these circumstances, ere it lost its shape or characteristic hue. Time does not allow me to allude to the changes in the aqueous chambers occasioned by inflammation, many of which are of the most interesting character, and most instructive to the student of pathology.—*Medical Gazette, Dec.* 1, 1848, *p.* 922.

136.—ON VARIOUS DISEASES OF THE EAR.—By Joseph Toynbee, Esq., F.R.S.

[The following observations were made by Mr. Toynbee, in reply to questions put to him at the Medical and Chirurgical Society:]

1. The statement of chronic inflammation and thickening of the mucous membrane lining the tympanic cavity consists in the use of leeches, followed by an ointment, composed of a drachm of powdered cantharides to an ounce of simple ointment, or of simple ointment, or of the tincture of iodine, below the ears, and as near to the tube as possible. To the outer half or two-thirds of the external meatus a solution of nitrate of silver is to be applied every third or fourth day; the salt is to be dissolved in water, and its strength may vary from half a drachm to a drachm of the salt to an ounce of water. In some cases the surface of the membrana tympani is to be washed with a weak solution of the nitrate of silver. from four to six grains to an ounce of water. Where the mucous membrane of the fauces is thick or relaxed, astringent applications should be made. Small doses of blue pill, bichloride of mercury, or mercury with chalk, should be administered, not with the object of producing salivation, or any depression of the system, but to aid the local applications in promoting absorption. Warm bathing, exercise in the open air, the avoidance of wine and stimulants, and of close and warm rooms, should be strictly enjoined. Under this treatment, cases of deafness of many years' standing have been cured or relieved.

2. Catheterism of the Eustachian tube is an operation very rarely called for; in nine cases out of ten, by means of the otoscope,* air is distinctly heard to enter the tympanic cavity, or there are other unequivocal symp-

* An elastic tube, twenty inches in length, each end being tipped with ebony; one extremity is introduced into the external ear of the patient, the other into that of the surgeon, while the former attempts to make a forcible expiration with closed nostrils.

toms indicative of the pervious state of this tube;* practical experience with the deaf quite agrees with the result of the dissection of the Eustachian tube.

3. Besides the otoscope, in order to arrive at something like an accurate diagnosis of the nature of ear diseases, it is requisite to use a small lamp and a delicate silver speculum. By means of the two latter instruments the exact state of the meatus and membrana tympani can be ascertained. It will be observed that the latter structure is not unfrequently more concave than natural—a consideration which is produced either by direct adhesion of the membrana tympani to the inner wall of the tympanum, or through the agency of membranous bands, or by a contraction of the tensor tympani muscle.

5. The principal disease observed in the fenestra rotunda consists in the presence over it of a distinct false membrane, which is attached to margins of the fossa fenestræ rotundæ; the latter fossa is often completely filled up by the thickened mucous membrane of the tympanum.

6. Many deaf persons, as in the case of one of the patients in whom there was found to be complete anchylosis of the stapes to the fenestra ovalis, hear musical sounds when sonorous vibrations can be made to act upon the nervous expansion, as through the medium of solids.

7. My experience has not been sufficient to indicate by the kind of deafness the particular part of the ear affected.

8. As a rule, I have not found the fluids of the labyrinth deficient in old persons, but the mucous membrane of the tympanum and the membrana tympani have been the seat of the disease.

9. Some deaf persons hear better in a noise, as in a carriage, than when quiet, because the fluid of the vestibule is thrown thereby into a state of undulation, and in this state can receive the vibrations of the thickened membrana of the fenestra rotunda, which are much less powerful than is natural; indeed, supposing the views on the physiology of the tympanum advanced by Mr. Brooke to be correct—and thus far all my researches tend to establish their accuracy—in those cases where the stape is so firmly fixed as not to be able to press upon the labyrinthous fluids, and give them a certain state of tensity, the vibration produced by a carriage, or by a loud sound, would in some measure be a compensation.

10. In some deaf persons there is an over sensibility of the nerves of the ear; and a loud sound, or a loud voice aggravates the malady by causing a forcible contraction of the muscles of the internal ear, and a rigid state of the membrana tympani.

11. Tinnitus aurium is probably dependent upon the constant compression of the contents of the vestibule, and by the pressure inwards of the stape by means of rigid bands of adhesion, thickened base of the stapes, &c.

12. There are cases where loud reports produce a rupture of the membrana tympani; others, in which the hearing becomes gradually dulled, as in the right ear of sportsmen. I have not been able to dissect any cases tending to elucidate the pathological condition.

Medical Gazette, February 23, 1849, p. 334.

137.—ON THE DEAFNESS OF ELDERLY PERSONS.—By JOSEPH TOYNBEE, Esq., F.R.S., &c.

[Mr. Toynbee begins by stating that deafness is not so common in old people as is generally supposed, and that it does not depend upon the decline of nervous power. He says:]

* Although the air is heard to enter the tympanic cavity, it does so with the production of a variety of sounds, as a puffing, bubbling, and cracking, according to the condition of the mucous membrane of the tympanum.

The results of my experience tend to show that this decline of the power of hearing in old age is dependent upon the influences to which aged persons are frequently subjected; namely, the prolonged stay in warm and close rooms, the avoidance of the open air, the cessation from bodily exertion, the want of attention to diet, and to the healthy performance of the functions of the skin; and that it does not depend upon the decline of nervous power, or upon an atrophy of the tissues which compose the organ of hearing. On the contrary, an extensive field of *post mortem* investigation has demonstrated, that the *most frequent* pathological condition found in cases of senile deafness, is a considerable increase in the substance of the mucous membrane lining the tympanitic cavities; and that the evidences of atrophy of the tissues are very rare. The pathological condition *second* in frequency in these cases, is a thickening of the *membrana tympani;* and the *third* consists in the presence of bands of adhesions, which connect together various parts contained in the tympanic cavity and these contents to the walls of the tympanum. The examination during life of elderly patients suffering from deafness, quite agrees with the results of the pathological researches. Thus, while the external surface of the membrana tympani remains smooth and shining, its substance is seen to be whiter than natural; upon attempting a forcible expiration with closed nostrils, air is heard by the otoscope to enter the tympanic cavity, but it produces an unnatural sound; the hearing is generally worse during an attack of cold, and in dull weather.

[After giving the details of a number of dissections of the ears of deaf people, Mr. Toynbee goes on to say:]

It being now established by dissection that the most frequent pathological condition in the ears of elderly deaf persons consists of a thickened state of the mucous membrane, the presence of bands of adhesion, and a thickened condition of the membrana tympani—any one of which circumstances is sufficient to prevent the passage of sonorous undulations from the membrana tympani to the expansions of the auditory nerve—it is highly important to inquire whether any remedial measures can be suggested which will tend to diminish these diseased conditions, and consequently improve the power of hearing. Practical experience induces me to believe, that not only may the thick membrana tympani be relieved, but the thickened mucous membrane be so reduced, and in some cases the bands of adhesion so far relaxed, that their presence will offer scarcely any impediment to the function of hearing.

The local application most suitable for this purpose which I have tried, is that of a solution of argenti nitras, of a strength varying from half a drachm to two drachms of the salt to an ounce of distilled water. Proceeding from the exterior orifice of the meatus externus, the passage may be touched to an extent varying from one-half to two-thirds of its length every third or fourth day. In some cases the membrana tympani also may be washed with a solution of argenti nitras, of six grains to the ounce. Where the noises are loud, and the symptoms indicate much congestion in the ear, leeches should be applied immediately *below* not *behind*, the ears; and, where there is irritation of the external tube, an ointment composed of half a drachm of pulvis cantharidis, added to an ounce of simple ointment, and applied behind and below the ear, either daily, or every other day, will be found beneficial.

The administration of alterative doses of pilula hydrargyri, hydrargyrum cum creta, or the hydrargyri bichloridum, is very useful; but it must be always recollected that these doses ought to be so proportioned, that neither debility nor any other unpleasant symptom shall be produced; in other words, so gentle should be the alterative, that no sensation should suggest to the patients that they are under a course of medicine.

In addition to the medicines recommended, patients should be cautioned to avoid warm close rooms, and sitting very near the fire: no wine should

be taken unless diluted with water; daily exercise, and where possible on foot, should be taken in the open air; together with a warm bath every week or ten days. This course of treatment has been productive of the greatest advantage in several cases of deafness of a most unpromising character. All the cases which I shall now proceed to cite, are those of patients who considered old age to be the cause of their failure of hearing, and some of them were older in constitution than the mere statement of their years would indicate.

Case 2.—R B, Esq., aged eighty, in tolerable health, consulted me on the 29th of March, 1844, on account of deafness in both ears. He stated that three years before, the power of hearing began gradually to decline in the right ear, and had continued to do so up to the time of consultation, that, about six months previously, the left ear had been similarly affected, and that his deafness had so much increased as to disable him from hearing the voice without the aid of a speaking trumpet. He was unable to assign any cause for the deafness. Upon examination, the membrana tympani in each ear was observed to be dull and opalescent, and although by aid of the otoscope, the air was heard to pass into the tympanic cavities, yet it did so with a bubbling crackling sound, indicating obstruction. Two grains of *pilula hydrargyri* were ordered to be taken every night and a stimulating liniment to be applied around and below the ears. This plan having been persevered in for about three weeks and some slight improvement experienced, the patient was directed to take one grain of *hydrargyrum cum creta* daily; and at the end of two months this gentleman recovered his hearing, and gave up the use of the speaking-trumpet.

Case 3.—J. P. Esq, aged sixty-four, consulted me in July, 1845. During the last four or five years the right ear has been growing deaf, and the deafness is so far advanced as to render the ear useless to him. Has been suffering from a cold for a few days, during which there has been a sensation of singing and of vibration in the head and ears, accompanied with deafness. In each ear there was a large collection of wax, on the removal of which the symptoms somewhat abated. The membrana tympani of both ears was white. Air passed freely in to the tympanic cavities. The fifteenth of a grain of *hydrargyri bichloridum* thrice a-day was prescribed, and counter-irritation about the ears. In the course of six weeks the patient had perfectly recovered.

Case 4.—Lady R., aged sixty-two, consulted in December, 1848, for a deafness which had come on during the preceding month, and gradually increased, till by the time I saw her, it was requisite to speak loud and close to the ears. The deafness had been first perceived after a cold, and was accellerated by an attack of influenza. The feeling in the right ear was that of a veil hanging over it. In each ear the *membrana tympani* was white, and air passed freely into the tympanic cavities. The treatment pursued consisted in the application of a solution of *argenti nitras* to the outer half of the external meatus; beginning with the strength of a drachm of the salt to an ounce of distilled water, afterwards increasing it to double that strength, and occasionally applying the *argenti nitras* in the solid form. This course of proceeding, coupled with the administration of alterative doses of *pilula hydrargyri*, effected so great an improvement, that in two months this lady had no difficulty in hearing in ordinary society.

Case 5.—Mrs. A. T., aged sixty-seven, consulted me in April, 1845. She stated that when eight years of age she fell down on the *left ear*, and had been deaf of that ear ever since. About four years ago, loud internal noises disturbed the right ear, and increased to so distressing a degree, that this lady felt as if she were continually travelling in a carriage over gravel; at times a loud explosion would be heard, succeeded by acute pain. She can scarcely hear her own voice, and is obliged to make use of a trumpet in society. The ears seem to her stopped up with pegs. She attributes this deafness to a close attendance upon the sick room of her husband during a long illness.

Right Ear: Membrana tympani concave, and evidently nearer to the promonotory than is natural, and the membrane is so white that the malleus is not distinguishable.

Left Ear: Membrana tympani has been entirely removed by ulceration.

TREATMENT.—In the first place, leeches were placed immediately below the ear; tincture of iodine was applied to the external meatus of the right ear; and three grains of *pilula hydrargyri* were given every night.

June 3.—Feels much better; has less confusion in the head, and more confidence in herself.

June 15.—The noises are so much diminished, that she is no longer troubled by them; is feeling stronger and better, and the hearing is improved.

CASE 6.—Mrs. T., aged seventy, applied to me in May 1845. Has been deaf for the last two or three years, especially in the *right ear*. The deafness came on with a feeling of pulsation, and was increased by travelling on a railway. There is a constaat singing in the right ear.

Right Ear:—Hearing distance* half an inch. External meatus slightly tumefied. *Membrana tympani* white like parchment.

Left Ear: Hearing distance one inch. Membrana tympani quite white.

I had not an opportunity of watching the progress of this case, but it is introduced here to show the common condition of the membrana tympani in senile deafness.

CASE 7.—J. C. Esq., aged sixty-four, consulted me in November 1844. His father became deaf at the age of fifty, and he has a sister deaf. About a year ago, he found that he was deaf in the left ear; might have been deaf a longer time; but at the period mentioned, a singing commenced in the left ear which has continued without intermission ever since. Occasionally it is much diminished. The noise and deafness are both worse during a cold. The right ear is not so bad as the left. When he closes the right ear he cannot hear any sound naturally.

Right Ear: Membrana tympani opaque; the handle of the malleus is only just discernible. When air is forced, the otoscope enables air to be heard entering the tympanum in a series of small puffs. After the air has been forced into the tympanum, a cracking sensation is experienced. Hearing distance two inches.

Left Ear: Membrana tympani white; handle of malleus not discernible; air enters the tympanum in a short puff. Hearing distance, absolute contact.

I prescribed for this gentlemen two grains of *pilula hydrargyri*, to be taken every night, and tincture of iodine was applied behind the ears. In the course of three months I saw him again, and found the hearing decidedly improved; the noises also had much diminished.

CASE 8.—Mrs. R. N., aged sixty-four, consulted me August 2, 1844. For the preceding four or five months, deafness had been coming on, and had lately so much increased that she finds it difficult to hear any conversation. Has for several years been subject to occasional dulness of hearing. The present deafness was apparently produced by an attack of cold, which left a sensation of fulness in both ears. The membrana tympani of each ear is quite white.

TREATMENT.—One-twentieth of a grain of *hydrargyri bichloridum*, in conjunction with *vinum ferri*, was administered three times a day. The dose of bichloride was subsequently increased to one-sixteenth of a grain, and a solution of *argenti nitras*, half a drachm of the salt to an ounce of distilled water, was applied to the outer half of the external meatus. In the course of three months this patient recovered her hearing, and has remained quite well ever since.

In the above paper I have only adverted to the more frequent causes of

* I have used a watch for several years which is heard distinctly at a distance of three feet by a healthy ear, with this watch I have always calculated the hearing distance.

deafness in elderly persons. There are other cases in which the stapes become more or less firmly anchylosed to the margin of the fenestra ovalis, and in which little or no relief can be anticipated; these cases, however, as far as my experience enables me to judge, are comparatively rare.

Monthly Journal, Feb., 1849, *p.* 521, *and March*, 1849, *p.* 570.

TOXICOLOGY, &c.

138.—NEW PROCESS FOR THE DETECTION OF METALS IN MEDICO-LEGAL RESEARCHES.

In the Annales d'Hygiene Publique, for January, 1849, we find a paper by M. H. Gaultier de Claubry, on a "Process by which all Metals can be obtained by a single operation, in chemico-legal researches." His objects are,—1, to obtain in all cases a solution of the metal; 2, to collect the metal from the solution; and 3, to present it in solution, in as concentrated a form as possible, to the action of chemical reagents. He says:

With this intention (that of obtaining a perfect solution of the metallic substances), hydrochloric acid or chlorine have been employed, with more or less advantage. Without stopping to discuss the advantages or inconveniences arising from their employment, we may say, that the alteration desired to be affected by them is always more or less difficult, and that a great proportion of the organic matter resists their action. We know, from numerous facts, how much more readily a body enters into a new combination when in a nascent state, that when in the form under which we see it; and it is precisely in this state that chlorine may be made available for the object which occupies our attention. . . If we introduce any organic matter into fuming hydrochloric acid, and, after having removed the fatty matters, which are altered with difficulty, gradually add concentrated nitric acid to the fluid, either cold or slightly warmed, a complete solution is obtained of every thing, with the exception of fatty matters. The solution is almost colourless, transparent, and can be afterwards tested with the greatest facility.

The stomach, intestines, liver, products of vomiting, excrements, blood, urine, wine, milk, earth from burying-grounds, etc., etc., can all be treated after this method, which requires no particular care, so that the operation is performed as easily as the solution of a metal in an acid. Where the poisonous agent is arsenic, if the operation be conducted slowly, the metal does not pass off by evaporation; however, as a portion of chloride of arsenic may be volatilized, and as the chlorine and acid requires some means to prevent them from passing off, and incommoding the operator by filling the laboratory with their vapours, it is always best to use a retort furnished with a tubular receiver. When the operation is finished, the condensed liquor is to be treated in the manner to be presently described. A tubular retort, into which are introduced in succession, first, the hydrochloric acid, then the suspected materials, and finally the nitric acid, is thus sufficient for the operation. If it be known that arsenic do not exist, and there be no necessity for guarding against the escape of acid vapours and of chlorine, the operation may be performed in a matrass. By this process the difficulties are prevented which arise from the employment of sulphuric acid for the destruction of the organic materials, and a perfectly liquid product is obtained.

When the materials are much disorganized, the nitric acid is to be introduced gradually, and gentle heat is to be applied. When after successive additions of the acid, the organic matters have disappeared, leaving only fatty matters, the liquor is to be decanted, and the residuum washed several times in distilled water. This is to be poured off, and mixed with the acid solution. After this, the detection of the metals becomes extremely easy, and may be effected in various ways.

If it be desired to use hydro-sulphuric acid, the nitric acid must be driven off, by boiling the liquor with an excess of hydrochloric acid, until chlorine ceases to escape: after this, the liquor will only have to be tested for zinc, which may be present accidentally, or for those metals which are not precipitable by hydrosulphuric acid. If Marsh's test is to be employed, the liquor must be saturated with pure potash; and, after decomposition has taken place, sulphuric acid must be added, till the last traces of nitric acid are removed. The operation may then proceed in the ordinary manner.

I have employed another process, which seems to offer important advantages, and is easy to be performed: it depends on the precipitation, by a galvanic current, of the metals in solution. After having concentrated the liquors, as far as experience may determine to be necessary for driving off an excess of acid, there are to be placed in the solution two plates of platinum, or a single plate of that metal, forming the cathode of a permanent battery; and another of zinc (if that metal be not sought for), of tin, or platinum, forming the anode. After an interval of greater or less duration, according to circumstances, but never exceeding, in the most unfavorable conditions, eight or ten hours, the platinum is covered by a deposit of the metal, or metals, which were in solution. This deposit is to be washed, and treated with hot or cold nitric acid; a solution of the metal or metals is thus obtained, which, from the small quantity of liquid, can be operated on with the greatest facility. In this way, almost infinitesimal quantities of the various metals may be detected, and it is obvious that the same proceeding is applicable to all, with the exception of silver, which is rarely to be tested for in cases of poisoning, and zinc, which necessitates the employment of tin or platinum, as the anode of the pile.

Although sparingly soluble, chloride of lead dissolves in an excess of hydrochloric acid easily enough for all the lead to be detected in the liquor.

If the presence of arsenic be suspected in the matters to be examined, the liquid procured by the treatment with nitric acid, must be saturated with potash and after the solution has been conveniently concentrated, it must be mixed with the solution of the organic products. In no other case have volatile products to be dealt with.

It is not worth while to describe the numerous experiments which I have made on this process, as, in the hands of chemists, it will present no difficulty in its application.

The legal chemist is not only called on to afford light to the investigations of justice, in cases of poisoning, but frequently also to perform experiments, with the view of detecting the presence of substances which are not in sufficent quantity to act at once as poisons, but whose use is to be prevented on account of the accidents to which they may give rise: *e.g.* the presence of copper in bread. It is well known, that bakers have sometimes fraudulently introduced extremely small proportions of sulphate of copper into paste. The combustion of the charcoal from bread is very tedious, but an examination is performed with ease and rapidity by the process which I have described. It permits a large quantity of bread to be operated on, and a repetition of the experiments, with a degree of exactitude, which leaves nothing to be desired.

When, in testing for zinc in bread, or in other organic matters, recourse is had to carbonization, there is always danger of a portion of the metal being volatilized; by treating it with aqua regia, the operation is rendered easy, and no part of the metal is lost. It is not necessary to mention all the other circumstances to which this new method may be applied. I have met with no case in which I have not been able to employ it; and hence I may consider its adoption will render great services to chemists, when called on to make researches of the kind under consideration.

It may be objected to this method, as to many others in which hydrochloric acid has been used, that this acid may contain arsenic. There is

but one answer to this objection, viz., that as hydrochloric acid can be obtained free from arsenic, such must be procured, and alone employed. Sulphuric acid, also, often contains a greater or less quantity of this metal; that only which is free from it, is to be used.

London Journal of Medicine, March, 1849, p. 292.

139.—ON THE USE OF IODIDE OF POTASSIUM IN CHRONIC LEAD POISONING.—By M. Melsens.

The treatment proposed by MM. Melsens and Natalis Guillott rests on this principle: to render soluble the metallic compounds which the system would retain, by associating them with a body which the system most readily eliminates. This point of view has already been realized: first, by means of the property possessed by all the insoluble compounds formed by salts of mercury and the substances which are met with in the system, to become soluble in iodide of potassium; secondly, relying upon the facility and rapidity with which this system eliminates the iodide of potassium, it has been admitted by analogy that the compounds of lead retained by the system would most probably be dissolved and eliminated by iodide of potassium.

In the present communication, M. Melsens mentions several well authenticated cases of recovery from poisoning by preparations of lead. All the patients treated with iodide of potassium were cured. M. Melsens shows clearly that neither sulphuric acid, nor the sulphates can be considered as remedial agents in chronic diseases arising from handling preparations of lead, whilst the sulphate of lead is a poison sufficiently virulent to destroy animals in a few weeks. Dogs never resist its action longer than one month, and some die in a few days. When sulphate of lead and iodide of potassium are conjointly administered to a dog, no morbid effect is produced within the time necessary to kill a dog to which the sulphate alone was administered.

M. Melsens says that, if a very strong dose of iodide of potassium be administered in the first case to a dog suffering from disease arising from the administration of the sulphate, carbonate, or iodide of lead, he quickly dies; but that if on the contrary, we commence by giving small quantities of iodide of potassium at a time, and gradually increase the dose, the animal is cured in a very short time. The doses of iodide of potassium which kill a dog labouring under the effects of lead, produce no action on a healthy dog. M. Melsens also relates several cases of complete cure which he obtained by following the same plan of treatment with persons affected with tremor from working on mercurial preparations. One of these was completely cured without ever discontinuing his regular work. The mercury came away in the urine, and was found in the state of the iodide: it was impossible to find any trace of the mercury in the urine of the patient after his recovery.

The result of the facts established in this communication is that, by means of the treatment with iodide of potassium, the cure of chronic poisoning by lead or mercury is not obtained until after acute poisoning has first taken place, which acute stage the medical man is fully able to direct, according to the strength of his patient, but which ought to be an object of the most scrupulous attention on his part. The experiments also prove that, although certain medicinal preparations have an action of their own, yet they also act through the medium of substances which they find in the animal economy.

[We do not find that iodide of potassium exerts any well-marked solvent action on iodide of lead, although it very readily dissolves the iodide of mercury. It would have been most satisfactory if, before assigning the recovery of these cases to this solvent action of iodide of potassium, the ex-

perimentalist had distinctly proved that lead was thus carried out by the secretions more rapidly than when the iodide was not exhibited. Until this has been shown, the conclusion respecting the curative properties of this salt is not warranted by the facts. It has been recently tried in some well-marked cases, and has signally failed.—Ed. Med. Gaz:]

Medical Gazette, Feb. 23, 1849, *p.* 344.

140.—CASES OF POISONING WITH CHLORIDE OF ZINC.

Dr. Thos. Stratton, R.N., relates in the Edinburgh Medical and Surgical Journal, for October, 1848, two cases of poisoning with chloride of zinc. In both cases, a wine-glassful of solution was swallowed, containing in one case, about twelve grains of the salt, and in the other, about two hundred grains. In the latter case, burning pain in the gullet, burning and griping pain in the stomach, great nausea, and sense of coldness, were instantly felt. Vomiting followed in a few minutes. Dr. Stratton saw this patient twenty minutes after the accident, and instantly made a strong solution of home-made brownish soap, of which he made the patient swallow at intervals, three or four pints. Afterwards, olive oil was given, and the patient recovered. The other case was not seen by any medical man; but it also terminated favourably. Dr. Stratton suggests either soap, or carbonate of soda or of potash, as antidotes to chloride of zinc, and supports his suggestion by the recital of experiments which he has performed.

London Journal of Medicine, March, 1849, *p.* 294.

141.—CASE OF POISONING BY YEW-BERRIES.—By Dr. James Taylor, Castle Cary.

[As cases of poisoning by the berries of the yew, (taxus baccata) are rare, and as some writers have denied the poisonous nature of the tree altogether, the following case becomes interesting.]

October 28th, 1838. Mary Baker, a fine healthy child, between five and six years of age, ate freely of yew-berries just before going into church. About an hour after, during divine service, she fell from her seat and was instantly removed, in an insensible state to her home. I saw her immediately; the surface of the body was cold; the countenance pale; breathing laborious and frequent; pupils very dilated; pulse feeble; convulsions and vomiting. Having carefully examined the head, and finding it was not injured by the fall, I gave an emetic, and from what was ejected, it was evident she had eaten a considerable quantity of the berries; not the mucous part only, but the seeds, wherein I believe is the most active principle of the berry, for the mucous or fleshy part of the berry has been frequently eaten with impunity. As soon as it appeared the stomach had been freed of its contents, a purgative was given, and had the desired effect, but the child never rallied from the first. She continued in a comatose state, and died in *four hours* after eating the berries. An inquest was held, but no *post-mortem* examination allowed. I stated, in my evidence, I considered yew-berries poisonous, and that the child's death had been occasioned by them, but I remember several of the jury were very sceptical on the point.

Provincial Journal, Dec. 27, 1848, *p.* 408.

142.—CASE OF POISONING BY OPIUM, TREATED BY ELECTRO-MAGNETISM.—By Dr. Lancaster.

[A woman was admitted into University College Hospital, laboring under the symptoms of poisoning by opium. After the use of the stomach pump,

and the injection of coffee and ammonia into the stomach, the remedies employed were, first, cold affusion, then the hot bath, and afterwards a slight bleeding; the use of the coffee and ammonia being continued in the interval. The symptoms improved for a short time after each change of treatment, but ultimately the coma increased, and the breathing became more laborious.]

Under these circumstances (says Dr. Lankester), the electro-magnetic battery was employed, and currents of electricity were passed through the shoulders, chest, abdomen and anus, and legs. Under this treatment the symptoms improved; the pulse became perceptible at the wrist; the tendency to drowsiness continued to a greater or less extent till ten P.M., but was effectually prevented by passing a weak electric current through both arms. When recovered, she stated, that about five o'clock the previous evening she had taken a shillings' worth (about two ounces) laudanum. She had therefore been eighteen hours under the influence of poison before any treatment was commenced. She was discharged from the hospital, but was subsequently re-admitted, with gangrene of the lungs, of which she eventually died. The post-mortem examination revealed a tuberculous condition of the left lung, and a large cavity, produced by gangrene, in the right lung. The author drew attention to the following points:—1. The condition which the patient was in when brought to the hospital. The symptoms were of such a nature, that all who saw her despaired of affording any relief, and only a sense of duty prompted me to make an effort for the rescue of the patient. 2. The benefit experienced in the use of cold affusion in this case would warrant its application in similar cases, or wherever the same combination of symptoms was present. 3. From the effect of the ammonia and the turpentine enema in this case, it may be inferred that such stimulants are amongst the remedies in cases of poisoning by opium which should not be had recourse to but under the most urgent circumstances. The condition of the nervous system is very different in coma from narcotic poisons, and coma from mere congestion. 4. The reaction which was observed at two o'clock, and attended with more decided symptoms of narcotism, may, perhaps, serve to explain the cause of death in cases where persons have apparently recovered from the effects of narcotic poisoning, and afterwards again sunk. 5. The evident advantages of using the electro-magnetic apparatus as a means of arousing the sensorium in cases of poisoning by opium, especially when, as in the present case, other means cannot be well employed. 6. The tuberculous condition of the lungs may raise the question as to whether this was the result of the depression brought about by the poisoning, or whether, rather, this condition was not present when the poison was taken, and contributed to that congestion of the lungs which was so remarkable a feature of the case, and brought on the gangrenous condition of these organs, of which the woman died. 7. The non-contracted condition of the pupils, and the want of opium smell in the contents of the stomach, are points worthy of notice in this case. *Medical Gazette, Dec. 22. 1848, p. 1080.*

143.—ON THE PRESENCE OF URIC ACID IN THE KIDNEYS, AS A SIGN OF A CHILD HAVING BEEN BORN ALIVE.—By Dr. VIRCHOW.

Dr. Virchow, in the Transactions of the Berlin Obstetrical Society, has proposed a sign, to ascertain whether a child has been born alive; or rather, whether it has lived more than two days. The test is to be found in *the absence or presence of uric acid in the kidneys.*

Dr. Virchow wishes to show that the presence of uric acid in the kidney (at once to be detected by the naked eye), is a conclusive proof that the child found dead has been born alive. The ancient anatomists remarked a red or yellowish substance coating the mammillæ of the kidneys of infants,

and which modern science has found to be uric acid, and analogous to the calculi sometimes found in the bladder of children. Schlossberger treats of it under the name of "Infractum acidi urici;" and it is easily discovered by making a transverse section of the kidney, when a considerable number of yellowish-brown, and sometimes light yellow, rays of this substance, are seen ramifying from the tubular, and sometimes from the cortical substance, to the mammillæ. Under the microscope, we make out sometimes solid cylindrical particles, of a yellowish-brown colour, though more frequently these cylinders seem to be not yet formed, or to be broken up into molecules of a darker colour, round or angular, and not unlike the crystals of urate of ammonia. A greater quantity is obtained by pressure. The conclusions of Dr. Virchow, are:—

1. That the deposit is never found in children who have been born dead, or who have died within forty-eight hours after birth.

2. That the deposit is not found, or does not occur, until about forty-eight hours after birth.

3. That the deposit is not generally found later than the twentieth day after birth.

There are, however, exceptions to these rules; for the deposit was, in one case, found on the twenty-ninth day after birth; and Dr. Virchow had not found it in an infant dead on the tenth day; nor in another on the thirteenth; nor in a third on the sixth day; these, however, may be the consequence of disease. The subject is now left in the hands of British observers, who I trust, will soon determine the value of Dr. Virchow's views. —[Abridged from Dr. Bushman, in Medical Times for January 20. 1849.]

London Journal of Medicine, Feb. 1849, p. 206.

MIDWIFERY,

AND

THE DISEASES OF FEMALES.

144.—ON THE PHYSIOLOGY OF PARTURITION.—By Dr. W. Tyler Smith, Lecturer on Obstetrics in the Hunterian School of Medicine.

[On physiological grounds, Dr. Smith would divide the process of labour into five stages, as follows:]

1. The Preliminary Stage, in which the preparations for actual labour are made.

2. The stage of Dilatation, in which the os uteri is dilated for the passage of the presenting part of the fœtus.

3. The stage of Propulsion, in which the fœtus is propelled through the os uteri and the vagina.

4. The stage of Expulsion, in which the fœtus is expelled through the external parts.

5. The Supplemental stage, in which the placenta is expelled, and the uterus returned to a state of permanent contraction, and at length, of rest.

Thus it will be seen, from Dr. Smith's arrangement, that actual labour itself consists of three physiological stages, namely, Dilatation, Propulsion, and exclusion; the Preliminary and Supplemental stages are but accessory to these.

In the *Preliminary* stage there is little or no pain, the uterus descends somewhat, a permanent contraction of the organ takes place, rendering it more distinctly firm and ovoid than before, and the abdomen becomes quiet from the cessation of the peristaltic actions of the uterus. There is an irritable state of the rectum and bladder, leading to the frequent evacuation of the contents of these viscera. The effect of this irritability of the bladder and rectum is to free the pelvis and lower part of the abdomen from all unnecessary incumbrance, and so to give room to the parturient canal.

In this stage of labour, *the ovarian nerves* are the only excitors which are in action. The ovarian nerves, acting in the manner already indicated, produce the utero-spinal excitement upon which the contraction of the uterus depends. The ovarian excitement is the *first* in the order of events, the *spinal excitability* and the action of the uterine motor nerves follow. The equable uterine contraction, produced by the ovarian excitation, impels the presentation against the os uteri, and the mechanical excitation of the nerves of the os uteri, thus occasioned, gradually induces the action of the next stage.

In the stage of *dilatation*, sensation, secretion, and motor action are all involved; these are distinct pains, the flow of blood and mucus, and the proper motor actions of the uterus. The uterine contraction becomes intermittent instead of continuous. Each pain is attended by contractile efforts of the fundus and body of the uterus, and by dilatation of the os uteri. Dr. Smith discusses the nature of dilatation very fully, proving it to be an active dilatation of a reflex kind. When the body of the uterus contracts, the tendency of the os uteri is to dilate. The dilatation of the os uteri, in parturition, is compared to the dilatation of the cardia when the œsophagus contracts in swallowing; to the dilatation of the sphincter ani when the rectum contracts; or to the dilatation of the sphincter vesicæ, which attends contraction of the distended bladder. The only difference is one of time, and the os uteri dilates slowly, because of its peculiar anatomical character. Hitherto this subject has been very ill understood, though it is of great practical import. Attention is next called to the direction in which the motor force of the uterus is exerted, in this stage of labour. It is exerted downwards and backwards, in the direction of the triple axis of the child, the uterus, and the inlet of the pelvis. This is exactly the direction in which the fœtus is required to advance during this stage. Up to this point, the lower medulla only has been engaged in the reflex motor actions; but when the dilatation is complete, sickness or vomiting often occurs, and these prove that the medulla oblongata is now involved in the process. The dilatation of the cardia in sickness or vomiting reacts favourably on the os uteri and vagina; and if vomiting take place, it is beneficial, by giving room, and increasing the freedom of the respiratory actions of the succeeding stage of labour. The next point referred to, is the rigor which is generally observed at the conclusion of this stage, of which an excellent reflex explanation is given. Some highly original observations are made upon the evacuation of the liquor amnii, which now takes place. The preservation of the membranes entire, up to this period, is important, not only because it insures fluid instead of solid pressure in the dilatation of the os uteri, but because the fluid pressure stimulates the excitor nerves less powerfully than the solid pressure of the subsequent stages. On the other hand, the rupture of the membranes, and the evacuation of the liquor amnii, at this point, not only provides more powerful mechanical excitation for the next stage, but, by diminishing the bulk of the uterus, gives greater facility for the action of the abdominal muscles. The perfect adaptation of even the slightest events in natural parturition, in this and a thousand other instances, is indeed most admirable.

In this stage of labour, *the ovarian nerves* are acting as excitors, as before, and *the nerves of the os and cervix uteri* come into play as additional excitors of the reflex actions. The only motor nerves involved, up to the point at which nausea or vomiting occurs, are *the motor nerves of the uterus*.

and the uterus is the only muscle in action. The head, or presenting part, of the child, and the amniotic bag, are the mechanical excitors of the uterine nerves.

In the stage of *Propulsion*, the uterine contractions are much more powerful than in the previous stages, and strong expiratory efforts accompany each pain. The more powerful efforts of the uterus depend on the circumstance that the fœtus is now brought into direct contact with the internal surface of the organ, in consequence of the discharge of the amniotic fluid. The expiratory efforts are excited, from the irritation of the vaginal excitor-nerves, by the advancing head of the fœtus. Dr. Smith minutely analyzes the various muscular actions which are now in operation; but for this we can only refer to the work itself. We quote, however, a few words which illustrate the beautiful manner in which volition and emotion tend to prevent laceration in the powerful pains of this stage:—

"When the pain can no longer be borne, the short gasp or groan is exchanged for a cry which dilates the glottis, and the pain and contractions subside. The cry is a motor action, excited by the emotion of pain, and instantly relieves the uterus of all extra-uterine pressure. Thus the glottis may be compared to a safety-valve, which is thrown open by emotion whenever the pressure becomes more than can be borne with safety. By the influence of volition we have this valve entirely under our control, to open or to close it, as may be necessary. When the expiratory actions are weak, we can enjoin the patient to hold her breath, and when they are too intense, or too long-continued, we can encourage her to cry out, which is of course equivalent to dilating the glottis, and expiring the contents of the thorax."

In this stage, the motor force of parturition is applied in quite a new direction. The direction in which the fœtus has now to pass, is that of the axis of the outlet of the pelvis, or downwards and forwards. The direction is given by the contractions of the abdominal muscles, which urge the fundus uteri against the vertebral column. It is remarkable also, that the long axis of the head, the advancing part, corresponds very closely with this new parturient and axis.

The excitor spinal nerves acting in this stage, are *the ovarian, the uterine, and the vaginal nerves*. These are now in relation both with the medulla oblongata, as the centre of the respiratory arcs, and with the medulla spinalis inferior, as the centre of the utero-spinal excitor and motor nerves. The motor nerves which are excited to action, are *the uterine nerves*, and the whole class of *respiratory motor nerves*.

In the stage of *Expulsion*, the actions of the previous stage are continued, but a new series of actions come into operation as the head of the child passes the ostium vaginæ. We quote a description of these actions, which it would be difficult to condense:—

"The perinæum, after being distended to the utmost, is now retracted over the head by the action of the levatores ani; the sphincter ani and sphincter vesicæ dilate suddenly, the vagina contracts upon the advancing mass, and the head glides rapidly into the world. The dilatation of the two sphincters, between which the vagina is placed, compensates admirably for the absence of a perfect sphincteric muscle at the outlet of the parturient canal. The effect of this double dilatation is, that at the precise moment when there is the most imminent danger of laceration, there is a sudden and considerable removal of tension from the parts endangered. The dilatation of the sphincters is partly dependent on the sensation and emotion of severe pain, and partly on the reflex dilatation peculiar to the sphincteric muscles. This view of the subject gives interest and importance to an action which has never been looked upon but as a very disagreeable *contretemps*. Physiology here, as in many other instances, transmutes the meanest actions of the economy, rendering them noble by virtue of their uses! At the same moment that the orifices of the rectum and

bladder are thrown widely open, there is generally a dilatation of the glottis. Even from women who restrain the expression of their emotions during the rest of labour, a cry of pain escapes at this juncture; this cry is necessarily accompanied by an open state of the glottis. The opening of the glottis is not at all accidental or voluntary, but is as regular and involuntary as its closure during the propulsive pains. Its effect is suddenly to take away the expiratory pressure from the expulsive action. Without this combined action of the glottis, and the sphincters of the rectum and bladder, for the defence of the ostium vaginæ, recto-vaginal laceration must be a very common accident of parturition. Such would inevitably be the frequent result of closure of the abdominal and thoracic cavities at all points, except that at the point of exit for the fœtus, in the final throes of labour."

The excitor nerves involved in this stage, are *the ovarian, uterine, and vaginal nerves, and the nerves of the ostium vaginæ;* the upper and lower medulla are implicated; and the motor nerves in action include the *uterine, vaginal, and respiratory nerves, and the nerves of the rectal and vesical sphincters.*

In the *Supplemental* stage the objects to be attained are, the expulsion of the placenta, and the contraction of the uterus so as to avert hemorrhage. The uterus contracts intensely, from the great irritation supplied by the fœtus in passing the perinæum; it is afterwards excited by the placenta; on the separation of the placenta, the wound-like surface from which it has been detached becomes strongly excitor. But new excitors are brought into play at this juncture: the breasts excite the uterus powerfully whenever the child is applied, and everything taken in the stomach produces uterine contraction. The uterine contraction is also aided by the maternal emotions.

The excitor nerves involved in this stage are *the ovarian, uterine, vaginal, mammary, and gastric nerves;* the motor actions are chiefly confined to the uterus, and the chief motors are the *uterine nerves.*

We quote, as an addendum to our sketch of Dr. Smith's account of parturition, his own summing up of the several parturient motor actions; than which nothing can be more graphic; or, we believe, more correct:—"We can now review the order of the nervi-motor actions of labor, the series of excitor surfaces involved one after the other, and the regular succession of stimulus and contraction in the different stages of the process. First in the order of events, there is the excitation of the ovarian nerves, followed by the equable and continuous contractions of the uterus. Then there is the pressure exerted by the fœtal head, as yet defended by the liquor amnii, upon the os uteri, and the consequent excitement of the orificial nerves, with the answering and intermittent contractions of the uterus. In the next place, the vaginal excitor nerves are irritated by the pressure of the now advancing and undefended head, or presenting part of the fœtus, an irritation which calls forth the respiratory actions of labor in addition to the uterine contractions. Then we have the excitation of the nerves of the ostium vaginæ, and the remarkable modifications of motor action thus produced. After the expulsion of the fœtus, the placenta remains to supply an intra-uterine stimulus, sufficient to affect the now exalted excitability of the uterine nerves, and thus to cause its expulsion. When the placenta has been expelled, the excitation of the uterine surface, from which the placenta has been separated, the excitation of the mammary nerves by suckling, and by the secretion of milk, and the excitation of the pneumogastric, now in excito-motor relation with the uterus every time food or drink are taken, are, with the aid of emotion, and the continuing ovarian irritation which has been present during the whole of labour, perfectly sufficient in normal cases to prevent hemorrhage, and gradually to effect the return of the uterus to the contracted and comparatively small size of the unimpregnated woman who has borne children."

London Journal of Medicine, May, 1849, p. 472.

145.—ON THE VAGINA CONSIDERED AS A PARTURIENT ORGAN.—By Dr. W. Tyler Smith.

The chief outlets of the mucous cavities, except the vagina, are guarded at the orifices by sphincters. The constrictor vaginæ, at the entrance of this canal, represents the sphincters found in other situations. It is a thin small muscle, not perfectly orbicular. A perfect sphincter in such a situation would indeed be out of place, owing to the immense dilatation required of the vagina in childbirth. An ordinary sphincter, if it existed, must far exceed the sphincter ani in size. When labour comes to be treated of, it will be seen how a sphincteric muscle in this situation is compensated for, and how well the actual arrangement contributes to the safe expulsion of the fœtus. The cellulo-fibrous sheath immediately surrounding the mucous membrane of the vagina is an extension of the fibrous tissue of the uterus itself. I have already said that the os uteri is formed, like the pylorus, by a re-duplication of the mucous and contractile tunics, only this mode of formation is more exaggerated in the os uteri than in the gastric sphincter. In labour, the process of dilatation causes the almost entire obliteration of the os uteri, and the uterus and vagina become, as it were, one uninterrupted canal. The vagina, and particularly the upper portion, enlarges in size during the latter months of pregnancy. A real growth of the fibrous or muscular sheath, similar to the growth of the muscular tissue of the uterus, with which it is continuous, takes place, though in a less degree. We know that during the early months there is some contraction, but in the latter months an enlargement, and even protrusion of the vagina; and during labour, not only is the diameter increased, but the length of the vaginal canal becomes greater. This could hardly exist, without an actual increase of size. *Ibid, p. 668.*

146.—ON RIGIDITY OF THE OS UTERI.—By Dr. W. Tyler Smith.

[Dr. Smith describes the opening of the os uteri during parturition as depending, "partly upon the mechanical distension of the non-contractile tissue, and partly upon the muscular dilatation of the contractile fibres which enter into the composition of the os and cervix uteri." And applying this fact to the explanation of rigidity of the os uteri, he shows that the latter consists either in the absence of distensibility, or of dilatability, or in both of these states combined. He remarks:]

During the premonitory and succeeding stage of labor, particularly with a first child, and still more when a first labour occurs late in life, the distensile element is frequently hard and unyielding. In multiparæ also, where contusion or injury has occurred in former labours, or when the os and cervix have been the seat of disease in the unimpregnated state, this form of rigidity is very common. It also occurs in cases in which the os uteri is heated, irritable, or inflamed, and where it is consequently not lubricated by the customary secretion. This form of rigidity is precisely similar to rigidity of the perinæum.

The other form of rigidity occurs in cases where the causes of acute labour or of excessive uterine action are in operation. Instead of the kindly physiological dilatation of the os uteri during the contractions of the body and fundus, the os uteri contracts with the rest of the organ, thus reversing its proper function. The contraction continues also, or the part remains rigid, in the intervals between the pains. Any irritation of the os uteri, whether by the head of the fœtus when brought to bear against it during a pain, or by the finger of the accoucheur, causes it to contract still more firmly. It is in this form of sphincteric rigidity that rupture of the uterus is to be especially dreaded.

In numerous cases, both the muscular and mechanical forms of rigidity

exist, and mechanical rigidity is itself sometimes a cause of spasmodic closure of the os uteri. The heat and irritability of the os uteri render it morbidly excitable, and the presence of the liquor amnii, or the presentation, instead of exciting a reflex dilatation of the mouth of the uterus, excites it to spasmodic contraction. As I have before observed, this state may be considered as a tenesmus uteri, and is analogous to the tenesmus affecting the bladder and rectum, in certain of their disordered conditions.

The treatment of rigidity of the os uteri must have reference to its twofold nature, and must be modified according as the rigidity is chiefly mechanical or sphincteric in its nature. Time and patience, waiting for the result of the uterine actions, and avoiding all uterine excitation, are generally sufficient to overcome the ordinary cases of rigidity, especially if the liquor amnii has not been evacuated. At every pain there is a physiological attempt to dilate the os uteri, and this at length succeeds in most cases, except in those in which the os uteri is diseased.

In plethoric cases, bleeding is often of great use; it tends powerfully to lessen the mechanical rigidity, and to promote the yielding of the sphincteric contraction. Bleeding from the arm is generally practised, but I have no doubt that in some cases not admitting of general depletion, and irreducible by other means, the application of leeches to the os uteri would prove of great service. Leeches are now so frequently applied through the speculum to the os uteri, for disorder of the unimpregnated uterus, that there could be no objection to their use during parturition. Nauseating doses of antimony, or ipecacuanha, are important remedies in rigidity of the os uteri; they act, in the first place, by diminishing the mechanical rigidity, on the same principle as they act in strangulated hernia; and in the next, they promote the muscular dilatation of the uterine mouth, by producing nausea, and thus bringing the reflex relation between the uterus and the stomach into play. The reflex relation which exists between the cardia and the os uteri, which I have so often referred to, is the most valuable as a therapeutic agent. Warm enemata are also useful in rigidity; they act upon the uterus as a local fomentation, and they excite another salutary reflex action —namely, that which exists between the sphincter ani and the os uteri. The dilatation of the sphincter ani, and even of the sphincter vesicæ, exerts a sensible influence upon the os uteri, when its closure is simply or chiefly sphincteric. A warm bath, or a hip-bath, or warm fomentation, tend to relax both contractile and mechanical rigidity. In those cases of closure of the uterus, arising from insuperable rigidity of the non-contractile tissue, the ultimate remedy is incision of the os uteri, at the most rigid portion of the ring it presents. In cases in which rigidity is irreducible by ordinary means, and consists of sphincteric or spasmodic contraction, the os uteri may be sometimes dilated mechanically by the fingers, or if this should be impossible, or if danger should be apprehended, incision into the os uteri is necessary here also. But in all kinds of manipulation at the os uteri, the utmost caution ought to be observed, lest rupture of the uterus, or convulsion, should be excited by the means taken to avoid a lesser difficulty.

Lancet, Nov. 25, 1849, *p.* 574.

147.—TREATMENT OF RIGIDITY OF THE OS UTERI.—By Dr Scanzoni.

Dr. Scanzoni, who has carefully examined the conditions of the os and cervix, in the latter months of pregnancy, believes that the constriction, which sometimes declares itself in the first stage of labour, is due to rigidity of the upper orifice of the uterine neck, and not the lower, which is generally sufficiently dilatable. Instead of the treatment usually recommended, viz., bleeding, antimony, belladonna, frictions, &c., he advises a continuous douche of warm water upon the os and cervix, directed by means of an appropriate instrument.—*Union Med.* and *Rev. Med. Chir.* Dec., 1848.

Prov. Med. and Surg. Jour., March 21, 1849, *p.* 185.

[On the *subject of artificial dilatation of the os uteri*, Dr. LAWRENCE, of Montrose, observes:]

I would advert to two points of practice, of which my experience is decidedly in favour although I cannot offer any statistics regarding them. The first is gentle dilatation of the os uteri with the finger, when the pains are at all inefficient. That uterine action is often rendered much more brisk and effective in this manner, I entertain not the smallest doubt; while, on the other hand, I have never experienced anything unfavourable to result from it. Query—Does the oxytoxic effect depend upon a reflex action being excited by the pressure of the finger, or upon the os uteri being placed in a more favourable position for being acted on by the longitudinal fibres of the body of the organ, when the os is pushed a little forward—just as the eye, when it has been deeply inverted by the internal rectus cannot be advantageously acted on by the external rectus, until it is brought forward by the inferior oblique?

The second point of practice referred to, is the method adopted to secure timely expulsion of the placenta. Besides directing pressure to be made over the uterus after the birth of the child, I invariably lay hold of the cord, and, without pulling, *retain it in a state of tension*. This seems to have the effect of exciting the uterus to speedy contraction; and to this practice I attribute the fact of the placenta being expelled in all my cases within ten or fifteen minutes, in the majority within five minutes after the birth of the child. While it cannot explain the fact of my fortunately having met with no cases of retained placenta from adhesion, I think I am warranted to ascribe to this method of procedure the fact of my having met with no cases of placental retention from inertia, or irregular contraction of the uterus.

I may also state what may seem almost too petty to mention, that I never use tape for tying the funis before the separation of the child, but always *strong sewing thread*. I was led to this from having got some serious frights at the outset of practice by the slipping of the tape, and the alarming, and to the child almost fatal hemorrhage which ensued. I have known the same casuality to occur in the practice of others, from the same cause.

Monthly Journal, Feb., 1849, p. 156.

148.—ON THE MUSCULARITY OF THE OS UTERI.—By Dr. W. TYLER SMITH.

Owing to the mixed mechanical and muscular dilatation of the os uteri, it generally opens slowly; cases, however, occur in which, after long-continued rigidity, it dilates so suddenly, that even from this fact alone it is difficult to consider it a mere mechanical distention, the resiliency of the part effecting its subsequent contraction. But the strongest physiological proof of the existence of muscular power in the os and cervix uteri, is the forcible contraction which sometimes occurs after full dilatation—as, for instance, in cases of encysted placenta, in which the fingers can only be introduced with the greatest difficulty; and again, in inversio uteri, where the speedy and powerful contraction of the cervix is one of the elements of the accidents most opposed to the re-position of the organ.

London Journal of Medicine, May, 1849, p. 465.

149.—CASE OF MALIGNANT TUMOUR OF THE OS UTERI EXCISED DURING LABOUR.—By J. M. ARNOTT, Esq., Surgeon to the Middlesex Hospital, &c.

[Mr. Arnott adduces the following case to show that the practice of excision, which is not much approved of in this country, may sometimes be both practicable and safe. The patient was a woman thirty-eight years of age, and at about the fifth month of pregnancy when first seen by Mr. Arnott,

It was then decided to do nothing until the labour came on. When the period arrived, Mr. Arnott tells us,]

On examination I found the anterior lip and right side of the os uteri occupied by a hard rugged tumour of oval form, and of the size of a large green walnut. Its limbs were clearly defined, and the tissue beyond, and as far as could be ascertained around, seemed to be in a natural state. The posterior lip of the uterus was soft and thin, and the os admitted two fingers, but beyond this it had not yielded for many hours.

During a pain the tumour and contracted os uteri were forced down by the child's head, nearly but not quite within sight. Assenting to the view of the case taken by Dr. Locock, I proceeded to fix the hooks of a pair of Lisfranc's forceps into the morbid growth, and upon this traction was made by Dr. Locock. I had proposed effecting excision by a curved hernia bistourie; but found I could not get the parts sufficiently low to allow of this being applied. I therefore resorted to the scissors curved on the blades, and guiding and guarding the points by the fingers of the left hand, I succeeded (by a succession of strokes, and cutting freely beyond it) in removing the tumour.

I had some fear of hemorrhage but not a tablespoonful of blood was lost. Immediately after the operation the os uteri expanded so uniformly that you could scarcely distinguish the wounded surface from the rest. In a quarter of an hour a living healthy child was born. The lady had a good recovery; and at the end of the month, everything had a favourable appearance.

The tumour measured two inches and a half in length (in the direction of the circumference of the os uteri), one inch and a half from above downwards, one inch and a half in thickness. It had a knobbed character, and over one of the projections ulceration of the mucous membrane to the size of a shilling existed. The substance of the tumour, on a section being made, presented a yellow colour and fibrous appearance, not circumscribed by a defined margin, not nucleated, but gradually lost in the surrounding tissue. In it, under the microscope, Mr. Tomes could not detect any appearances corresponding to those met with in scirrhus and cancer; but at one part of this fibrous mass near the ulcerated surface, and where it was of a greyish colour, and about apparently to undergo some change, Mr. Tomes discovered a very few cells of suspicious character.

The subject of the above case remained well for some months, when she was again subjected to attacks of hemorrhage. On one of these occasions, eight months after her confinement, in the absence of her usual attendant, and when the quantity and effects of the hemorrhage were somewhat alarming, I saw her, and found that, whilst the part from whence I had removed the tumour remained sound, the posterior lip of the os uteri was the seat of a similar disease, which extended upwards on the cervix beyond reach. The patient lived till June 1846, sixteen months after her confinement, when she died, having had, I understood, all the symptoms of malignant disease of the womb. An examination of the body was not allowed.

[In such cases as the following, however, the operation is certainly inapplicable. The patient was forty-one years old:]

On examination, the vaginal portion of the uterus was found to be enlarged, indurated, gristly. The anterior lip was of greatest size, but nearly the whole circumference had a rugged irregular character. The os was open; on the interior surface of both lips there was ulceration. The breach of surface on the posterior lip was excavated, as if by a knife. The diseased changes extended upwards, on the cervix, beyond the reach of the finger. The uterus was fixed in the pelvis.

[This patient was also at the fifth month of pregnancy. Premature labour came on about a fortnight afterwards, on the night of the 12th November. Dr. West attended the patient. After narrating the history of the labour, up to the morning of the 14th, he says:]

A few minutes after two, I returned into the room, a most violent pain came on, a sound as of something giving way was heard, and a dead male child, at near the sixth month, was born double, the right arm and side of the chest being almost black from the squeezing they had undergone. Immediately above were felt the membranes of another fœtus, which gave way in less than five minutes, and a female fœtus was born footling. It made a few attempts to breathe.

The placentæ were felt within the os, and slight traction by the cords removed them. The os uteri was now about three inches in diameter; no rent could be felt in it. On the evening of November 15th some uterine pain came on, and the pulse rose to above 120; it soon sunk after a few leeches, to 106, where it had been before labour, and there has since been no grave symptom.

In cases similar to this, (says Mr. Arnott,) where the cervix is involved, when sufficient time has elapsed to enable us to ascertain what nature can accomplish, and that delivery can no longer be delayed with safety, incisions offer the first and best means of relief. When, however, the malignant growth occupies a portion only, the half, of the os uteri, then the possibility of excision should be kept in mind. That this may be done during labour, with safety, the case which I have related sufficiently proves.

[This patient lived nearly six months after her labour, but she was confined to her bed and had severe suffering. When she died, extensive uterine disease was found.] *Medico-Chir. Trans.*, 1848, *p.* 37.

150.—ON LACERATIONS OF THE CERVIX UTERI.—By Dr. E. W. Murphy, Professor of Midwifery at University College.

Lacerations of the os uteri have been very little noticed, although my impression is that they are almost as frequent as lacerations of the perineum. They are not viewed as ruptures of the uterus, because the injury is not attended by the same fatal consequences as when the peritoneum is torn: the rent in the mouth of the womb heals with as little constitutional disturbance as that in the perineum, and therefore does not attract attention. The frequency of this accident may, however, be estimated by the traces that are left behind in the cervix, when the uterus becomes subsequently the seat of disease. Having had occasion, I might say constantly, to examine the os and cervix uteri, both by touch and with the speculum, long after delivery, in consequence of some symptoms of disease, deep fissures in the cervix, accompanied by a considerable degree of surrounding induration, attended with ulceration, gave abundant evidence of previous mischief: if inquiry were made into the history of her labours, the patient always gave a florid account of their severity, "the child obliged to be taken away by instruments," &c. Dr. Lever has directed the attention of the profession to these lesions as being the result of protracted labours: he says, "When the waters pass off early, and when the os uteri is thin and tense, such a lesion is by no means unusual; I have on many occasions pointed it out to the students in the hospital who have filled the office of obstetrical clinical clerk." These fissures, attended as they often are by great and irregular induration, as well as very troublesome ulceration, should be borne in mind if we would form a just estimate of the consequences of difficult labours, and especially of the imprudent application of instruments.

Separation of the cervix has sometimes taken place: the whole disc of the vaginal portion of the cervix has been detached and expelled with the head. Mr. N. P. Scott, of Norwich, relates the first case of this kind. The os uteri was rigid and contracted: it did not yield to the prolonged efforts of the uterus, and was at length torn off.

A similar case occurred in the practice of Mr. Hugh Carmichael, of Dublin:—A young unmarried female was pregnant of her first child: the wa-

ters were discharged in the commencement of her labour, when the os uteri was only sufficiently dilated to admit the point of the finger, being thin and hard. Her pains were slight, and she continued in this state for the better part of two days: the dilatation was then advanced to the size of a crown piece, beyond which it did not extend, its edges still continuing "hard and rimmy." Considering that the obstinacy which the os exhibited might probably result from insufficiency of the pains, Mr. Carmichael gave her three small doses of ergot of rye (five grains each) without effect: the os did not yield, but the head was propelled fully into the pelvis, pushing the cervix before it (there was no deformity of the pelvis). The woman was exhausted; she became delirious: the pulse quick and irregular: "in a word, she must have quickly sunk if interference had not been resorted to." While being delivered by the crotchet, "a strong contraction of the uterus succeeded, when the head was at once expelled, carrying before it the os and a part of the cervix of the womb, the diameter of which measured about three and a half inches." Two hours after delivery, jactitation, restlessness, and difficulty of breathing, took place: a full anodyne was given that procured rest. "On my visit the next morning," continues Mr. Carmichael, "(and I confess to you that it was not without strong apprehensions that I should have found her either dead or dying,) to my surprise she was sitting up in bed eating her breakfast, expressing how comfortable her condition was with that of the preceding day." She recovered without a single bad symptom, and in the usual time.

Dr. E. Kennedy met with two cases of this kind in the Dublin Lying-in-Hospital. In one, the woman was confined of her sixth child, and only seven hours in labour. Ten hours after delivery about two-thirds of the cervix was found to protrude from the vulva, which was twisted off. The other was a protracted case: the os was greatly congested, and while attempts were made to support the anterior lip from too much pressure, the posterior portion gave way. Dr. Kennedy removed the remainder. Both these patients recovered; the latter after a tedious convalescence. Dr. Lever relates, also, two cases. The first patient was in labour from Tuesday to Thursday afternoon, the os uteri resisting all the efforts of the uterus to dilate it, although aided by depletion, tartar emetic, and the local application of belladonna, which Mr. Day (the gentleman in attendance) "smeared on the os and cervix without any visible effect."

During a violent pain the os was expelled, having a very fœtid odour. Dr. Lever says, "the vaginal discharge was horribly fœtid; the anus was patent, and fluid fæculent matter was running out; the perinæum was of a dark red colour, swollen and œdematous. On examination, the head was found resting on the perineum, and the fourchette had commenced to lacerate." The child was delivered by the crotchett, "without greatly increasing the laceration that occurred." This woman died afterwards of puerperal arthritis.

The second is a very interesting case, which occurred in the practice of Mr. Evans. Labour commenced on Tuesday morning, at three o'clock, and continued until Thursday, two o'clock P.M., without producing any effect on the os uteri. Depletion, purgatives, local fomentations, anodynes, and tartar emetic, had been used without effect: the os was thinner, but merely admitted the tips of two fingers, and still felt like a hardened ring; the cervix was dilated, thin, and greatly on the stretch. Mr. Evans consulted Dr. Lever on the propriety of incising the cervix, in which Dr. Lever fully agreed: "the os was barely as large as a half-crown piece, and with the exception of the anterior fourth, felt as if it were drawn in with catgut; the anterior fourth was swollen, soft, and elongated." The pains for some time had been very frequent, vehement, and very forcing. Dr. Lever "divided the whip-cord margin of the os uteri towards the posterior half of the sides of the pelvis, in the direction of either sacro-iliac synchondrosis. The incisions were made during the contractions of the uterus: the patient made

no complaint; in fact they gave her no pain. The immediate result was a diminution of the œdematous condition of the cervix, and the loss of a small quantity of thin, watery blood. The pains which had been so forcing did not at first entirely cease, but were much moderated; still, feeble as they had come, slight progress was made: there was a cessation for half an hour; they then recommenced: at four P.M. the os uteri had dilated to the extent of two inches in diameter, and at a quarter to five a female child was expelled still-born, but was resuscitated on the application of the usual remedies."

In all these cases there was extreme rigidity of the os uteri; in all but one a very protracted labour: and notwithstanding so great an injury to the uterus, five of the six patients recovered. The cause of death in the sixth case is at least ambiguous: the most prominent symptoms were those of puerperal fever; and the condition of the vagina was just such as sometimes occurs when it is attacked by erysipelatous inflammation, the result of the absorption of some morbid poison.

The last is a highly instructive case because it points out the remedy for this extreme rigidity of the os uteri, and confirms the propriety of the practice which we pointed out in a former lecture, that of incising the cervix uteri. Hitherto the practitioner thought himself fortunate if the death of the child enabled him to remove it before any dangerous symptoms showed themselves. But you perceive that by promptly relieving this unyielding condition of the cervix, the child may be saved, and the mother secured from any risk of so serious an accident as that just described. Besides, recollect that in using this means, we are, after all, only imitating nature, who, in her own way frequently incises the cervix, and, as you see, sometimes separates it altogether: you cannot go wrong in following her example; and, therefore, when you meet with these very embarrassing cases, where the labour is prolonged, the os uteri undilatable, the child living, I feel justified in recommending you to incise the cervix for its relief. I almost question whether we might not, in some cases, make an artificial dilatation by a circular incision of the cervix, and thus take away the rigid portion completely. When, under so many disadvantageous circumstances, these patients have recovered from a natural separation of the cervix, there is no reason for supposing that they would not do so when artificially removed under all the advantages that art can give. The life of the child, that cannot otherwise be preserved, should receive its due weight in the consideration of this plan of treatment. The objection which presents itself is the risk of hemorrhage in the first instance, and of inflammation afterward. Hemorrhage is not very likely to be serious when the incised portion is so strongly compressed by the advancing head of the child, and if it occur after delivery, the plug would be a most effectual remedy. Any inflammation that might arise could easily be subdued: far more easily, it appears to me, than what might take place if no interference were attempted.

Medical Gazette, April 6, 1849, *p.* 573.

151.—ON A SUCTION-TRACTOR, A SUBSTITUTE FOR FORCEPS.—By Professor Simpson.

[After mentioning the suctorial discs of the cuttlefish and the limpet, and the tenacity with which these animals retain their hold, by means of their discs, Dr. Simpson says:]

Such an arrangement and apparatus may be imitated by art; and when rendered more perfect and complete, may perhaps give us a simpler and safer obstetric power for some cases than even the forceps. In one protracted case which Dr. Simpson described, he had lately made use of this power to extract the child. When applied, the head was still high up in the pelvic cavity, and the instrument easily afforded such a hold of the head

as to allow it to be slowly dragged forward and extracted. During this extraction the instrument required to be reapplied once or twice. Dr. Duncan and Mr. Dickson were present at the delivery.

The instrument used in this case was very rude and imperfect. It consisted of a common metallic vaginal speculum, fitted with a piston, and with the edge of the trumpet-shaped concave disc at its outer or broader end covered with leather. This broader and leathered end was coated with lard, and applied to the head of the child; and then an exhausting effect produced by moving the piston forward.

The apparatus would admit of much improvement and simplification, as by the mouth of it being made expansible, and capable of altering in shape, instead of metallic and fixed; by the inner edge of it being coated, as in atmospheric railways, by a thin layer or cushion of air inclosed in caoutchouc; by the exhausting apparatus being valved and more perfect, &c. &c.* But if the air-tractor could not be made both simple and satisfactory in its application, it would not replace the forceps; and more experience would be required to decide whether it had any title to do so.

If the instrument, when properly constructed, should be found to succeed, it would be still more advantageous in replacing the long, than in replacing the short forceps. In the case in which it was used, the head was of the height in which long forceps are usually required. If a suctorial tractor should answer in some long forceps cases, and enable us to drag with sufficient force upon the exposed portion of the scalp, it would save the danger dreaded by many, of wounding the uterus by introducing and working the blades of so long an instrument as the long forceps high up in the neck and cavity of the uterus itself.

Presentations of the breech sometimes require instrumental assistance. The hook passed over the flexure of the thigh is dangerous, and very apt to injure. The forceps, as recommended in these presentations by some authorities, are often inapplicable and inefficient. Perhaps the air-tractor may afford us a new and sufficient instrumental force for the management of some of these cases. Its use would be simpler and safer than any of the other methods proposed.

Dr. Simpson further observed, that he was not aware that any one had applied practically this obstetric means before it was employed in the case detailed to the society. But the idea of using such a power had been long ago proposed by a gentleman, for whose works and talents they all entertained the utmost respect, Dr. Arnott, of London. In his admirable work on Physics (p. 636), Dr. Arnott alludes to the subject in the following words: "The forceps (says he) to be well and safely used, requires address, which even the naturally dexterous man cannot possess without a certain degree of continued practical familiarity with it; and, except in large towns, a man must be unfortunate in his practice who often requires it; hence the really small number of persons who use it well. A tractor of three inches in diameter would act upon any body, to lift or draw it, with a force of about a hundred pounds—with more, therefore, than is ever required or allowable in obstetric practice. In lifting a stone, the tractor does not act as if it were glued or nailed to the stone, but merely bears or takes off the atmospheric pressure from one part, and allows the pressure on the opposite side, not then counterbalanced, to push the stone in the direction of the tractor; so when placed upon the child's head, it would not pull by the skin, in the manner of a very strong adhesive plaster applied there, as uninformed per-

* Since the preceding abstract was drawn up, I have made a great variety of experiments, with the view of ascertaining the best form of disc or mouthpiece and exhauster. I find that a syringe and piston, valved like the common breast-pump, so as to make a pretty perfect vacuum, and having a disc attached to it formed of a double cup, the outer cup of caoutchouc, and overlapping considerably the edges of an inner and smaller cup of metal or gutta-percha, makes an Air-tractor possessed apparently of the necessary applicability, and requisite adhesive and extractive power.

sons would be apt to suppose; but by taking off a certain atmospheric pressure from the part of the head on which it rested, it allows the pressure on the other side or behind to urge the head forward on its way. Of course the pressure in such a case would not operate on the head directly, but through the intervening parietes and contents of the abdomen. It would be preferable to have a gentle and diffused action of the tractor over a large space, rather than an intense action on a small space, and therefore a tractor for the purpose now contemplated should not be very small, and should have a little air underneath it in a slight depression or cavity at its centre. The forceps must be more effective than the tractor for rectifying malposition of the head, and diminishing its transverse diameter; but the tractor will answer both these purposes in a greater degree than might at first be expected."

Several of the old surgeons, as Pare, Paaw, Hildanus, Scultetus, &c., have described and figured suckers, or tractors, as applied to the head with the object of removing depressions of the cranium in children.

Monthly Journal, Feb., 1849, p. 556.

§ 'In attempting to construct a proper obstetric air-tractor, a great variety of forms had been tried by Dr. Simpson. The form which he found most effectual, consisted of a slender short brass syringe (1½ or 2 inches long) worked by a double valve piston, like a breast pump, having attached to its lower extremity a cup of half an inch in depth, and one and a half broad at its edge. Over this inner cup was placed a second cup formed of vulcanized caoutchouc, and so deep as to overlap the edge of the inner by six or eight lines. The mouth of the inner cup was covered by a diaphragm of very open brass wire gauze, and over it a piece of thin sponge, flannel or the like, was placed, with the view of preventing injury to the scalp, and not allowing it to be elongated and drawn up into the vacuous space in the manner which we see occurring with the skin in the common operation of cupping. The parts thus applied to the child's hand consisted of caoutchouc and sponge.

Such an instrument, when fixed to the palm of the hand, lifted readily without detachment a weight of thirty or forty pounds. This Dr. Simpson showed by experiments performed before the Society. An air-tractor, with a caoutchouc cup of three inches in diameter at its mouth, lifts, when applied and stretched upon the hand, a weight of sixty or eighty pounds.

The inner cup might be round, oval, &c., and vary in form and size. The outer caoutchouc cup would admit of much further improvement. A double cup of caoutchouc seemed to render the instrument stronger. Of course, with all this, the vacuum was still always more or less imperfect.

The air-tractor seemed to possess various advantages over the forceps. It was far less dangerous to the mother, as it was attached to the exposed part only of the scalp of the infant; the forceps were required to be passed high up between the head and maternal passages, and in incautious and inexperienced hands were apt to injure one or both. The materials of the air-tractor (caoutchouc and sponge) were safer to the mother and child than the material of the forceps (steel). The forceps always took up a certain amount of space between the head and passages; the air-tractor did not. The air-tractor was greatly less in size, and consequently far more portable. It could be applied with sufficient firmness and power to enable us to rotate the head, or change its position; as from, for example, an occipito-posterior, (the form of rotation most frequently required in practice). It probably could be applied also to change the presentation—which the forceps could not effect—as, for instance, to bring down the occiput, when fixed there, in frontal presentations. Perhaps it may be found as usual, or more so, when the head is at the brim as when it is at the outlet. It may be made so as to fix upon the breech—in cases in which the forceps cannot be very readily or safely used. If found perfectly easy of application, it may enable the accoucheur, by adding a few pounds to the strength of each pain, to bring to a safer and speedier termination cases that would otherwise go on

tediously, hour after hour, and in which we should still not choose to use so formidable an instrument as the forceps ; for it is to be recollected that the danger of parturition to both mother and child increases in a ratio progressive with its duration. In cases of inertia of the uterus—the most common cases for the short forceps—it will probably be found specially applicable. And in such cases it is surely better to extract the child by a safe force, thus applied *ab anteriori*, than to effect its expulsion by the ergot of rye—which produces its result by forcing the uterus to push and press its parietes with renewed power and violence against the opposing body of the fœtus.

Dr. Simpson stated that he had now used the air-tractor which he had constructed in several cases of labour, and with results answering his best expectations. But it doubtless admitted of much further improvement in construction, in mode of application. in working, and other details.

Monthly Journal, March, 1849, *p.* 618.

[On the probable uses of an air-tractor, Mr. James, of Exeter says :]

1st. It would be applicable in cases of disproportion with safety before the ear can be felt, and consequently before the short forceps could be employed.

2d. It would be applicable in very numerous cases, where we now hesitate to employ them, *i. e.*, where there is no disproportion between the head and the pelvis, but simply where from other obstacles, or defective uterine action, the labour has become long, exhausting, and consequently dangerous; and I may perhaps be warranted in believing that in such cases it would be employed many times where the forceps are either not employed, or with great reluctance.

3d. In cases of disproportion, where the head is too high for the ear to be felt, this mode of traction, although not sufficient possibly to deliver, might still suffice to bring the head of the child within the reach of the short forceps,—a great point gained in many cases.

Med. Gaz., March 16, 1849, *p.* 479.

158.—ON THE USE OF ICE IN PROMOTING UTERINE CONTRACTIONS.—By Dr. Louis Mackall.

Dr. Mackall, a highly respectable physician of Maryland, in a communication to the committee of the American Medical Association, states, that for several years past he has been in the habit of employing pounded ice in cases of suspended or protracted labour. That when this had been swallowed freely, the pains had immediately returned, the uterus had contracted strongly and the labour been speedily completed.

He also communicated letters from Dr. B. Mackall, Dr. Skinner, and Dr. M'Cubbin, of Maryland, strongly corroborating his statement of the efficiency of ice in promoting the contractions of the uterus.

Dr. B. Mackall remarks, that his experience in the use of ice for this purpose extends through a period of ten or twelve years. "During that time," he says, "I have had frequent opportunities of observing its effects, and I can safely declare, than in no single instance have I been disappointed in its action. I have used it under a variety of circumstances, and always with the most satisfactory result. In cases where labour pains had been suspended for twelve or twenty-four hours, they have been renewed promptly and efficiently. In cases of inevitable abortion, where the uterine contractions are feeble and inefficient, and where hemorrhage is considerable, I regard it as invaluable. In retention of the placenta from imperfect contraction of the uterus, and in cases of alarming hemorrhage after delivery and expulsion of the after-birth, it is equally applicable. In short, whenever the firm contraction of the uterus is desirable, that object will

most certainly be attained by the administration of ice." In no instance have I witnessed the slightest ill effect from its administration.

Dr. Blackburn, of Barnesville states, that he has used a strong decoction of the roots of the cotton plant in two cases of labour with successful issue, to promote uterine contractions where ergot failed.—*Transactions of the American Medical Association*, vol. 1, p. 234.

Monthly Retrospect, April, 1849, p. 87.

253.—ON THE INDUCTION OF PREMATURE LABOUR.—By Professor Paul Dubois.

M. Dubois confines himself to those cases where the safety of the mother is in question, not regarding in any respect whether the child is viable or not. This absolute abandonment of the interests of the infant, when the life of the mother is seriously endangered, although not admitted by many accoucheurs, now finds less and less opposition every day. M. Dubois lays down the following propositions:—

Pregnancy introduces into the economy numerous physiological and anatomical changes;—Among these changes some are constant; as the expansion of the uterus, and the vascular development of this organ. Others are variable; such as the phenomena arising from sympathy between the uterus and other organs.

These changes are generally confined within limits compatible with the general health;—Sometimes they exceed these limits, and give rise to morbid affections more or less serious, and such that the only resource for the mother's safety is to bring on labour.

Independently of the affections above alluded to, there are other diseases which may develop themselves during pregnancy, and, in addition, be aggravated by the mere co-existence along with them of that state. This aggravation may arise from mechanical conditions, or by way of sympathy, and may render necessary the induction of labour.

A case of severe bronchitis during pregnancy lately occurred in M. Dubois' clinique, where he had resolved to induce premature labour. But a favourable and sudden change took place in the disease, and rendered this operation unnecessary. The following additional propositions are laid down by M. Dubois.

1. Premature labour is more certainly indicated and induced with more chance of success, according as the morbid states for which it is resorted to as a cure are more closely connected with the pregnancy, and the necessary concomitant conditions of that state.

2. Further success is more probable according as the circumstances indicating the operation are likely to disappear on the cessation of pregnancy.

3. It is necessary that the operative procedure should be simple, and such as adds no additional danger to that which already exists.

From these propositions we may deduce the following consequences:—That artificial labour will succeed best in those maladies aggravated chiefly by the mechanical changes in the uterus; whilst, on the other hand, the chances of success will be less when the operation is performed for an intercurrent disease. Further, those cases arising from, and depending upon, simply mechanical causes, will be more likely to benefitted than those arising from sympathetic changes.

The first mechanical condition requiring the operation, is *excessive dilatation of the uterus by superabundance of the liquor amnii*. In illustration, a case occurring in the practice of M. Duclos (see Bulletin de la Faculté, tom. vi. p. 222) is cited, where artificially-induced labour evidently saved the mother's life. Another interesting case is mentioned, where M. Stoltz had resolved to resort to the same plan under circumstances of the greatest ur-

gency, but nature had completed the work before his arrival at the patient. The waters had flown off, and complete delivery restored the woman to comparative health.

The second set of cases sometimes demanding the operations, are those where, in addition to the pregnant uterus, *the abdomen contains large tumour*. Thirdly, cases where, from *malconformation of the pelvis and trunk*, there is not sufficient space for the uterus to develop itself. We may remark, however, that in these last sets of cases, premature labour generally comes on spontaneously.

Fourthly, cases of *retroversion of the uterus*, in which it becomes impacted in the small pelvis.

Fifthly, those cases of *uterine hemorrhage* where nothing but the evacuation of the ovum, and the contraction of the uterus, will stop the bleeding. We now come to another series of cases demanding the operation; and, firstly, we mention those nervous diseases which may demand it when they exist to an excessive and dangerous degree, as *chorea*, *convulsions*, &c. But M. Dubois inculcates extreme caution in such cases, as also in cases of *obstinate vomiting* during pregnancy. Two cases are mentioned in which *cholera* supervened upon pregnancy; in one labour was induced, in the other it came on spontaneously; both women recovered.

There is another series of cases sometimes demanding the operation namely, where there exists chronic disease, very much aggravated by the mechanical distension of the uterus, *as disease of the heart, of the aorta, asthma, &c.*

Again, it has been proposed to bring on labour in cases where the child has been previously found to *die at some regular time*, before the completion of the ninth month. But this ought to be done only when the infant is alive and viable, and even then it should be resorted to with reserve, as there may be hope that the disease which caused the death of the child in a former pregnancy, may have now disappeared.—*L'Union Medicale*, Nov. and Oct. 1848. *Monthly Retrospect, Jan. 1849, p. 16*

154.—NEW MODE OF INDUCING ABORTION.

Dr. Grenser, of Dresden, recommends, in the Nov. number of Schmidt's Jahrbuche, page 232, the warm douche applied directly to the uterus as a safe and efficient means of bringing on premature labour, when indicated by the state of the parts, or the general condition of the mother. In illustration, he gives the case of a female, thirty-three years of age, in whom, on account of a narrow pelvis, abortion had on a previous occasion been brought on by means of plugging the vagina. In the present instance the douche was resorted to in the eighth month, and was applied seven times in three days, and by means of a small canula. The water, he tells us, is to be of a temperature of 34° R., equal to 108° F., and the force with which it is to be projected equal to a fall of eight feet.

It is important that the canula be introduced well into the vagina, and that the removal of any obstructions be carefully attended to. In the case related, the parts became thoroughly relaxed, and parturition ran the normal course; the lochia was fairly established, and the mother did well. The child required turning, but was born alive and lived nearly twenty-four hours.—*Medical Times, April 7, 1849, p. 455.*

155.—ON THE NERVES OF THE UTERUS.—By Dr. W. Tyler Smith.

If we adopt the view that the plexuses of the abdomen, like the external plexuses, are mechanical adaptations for mixing nervous fibres from dif-

ferent sources, and apply it to the uterine nerves, it becomes a possibility, and I may say, a probability, that the uterine nerves are more variously derived than any other nerves of the body. They may be derived from different points of the great nervous tract between the organ of the pneumogastric nerve, in the medulla oblongata, and the origin of the sacral nerves, in the cauda equina. There is no actual impediment to the approach of nervous fibres to the uterus, from the medulla oblongata through the medium of the vagus; from the cervical portion of the spinal marrow by the phrenic; from the thoracic by the splanchnic nerves; and from the dorsal by the compound lumbar branches of the sympathetic, and from the sacral nerves, which latter come directly from the spinal cord.

[Dr. Smith gives the following physiological proofs of the existence of a large supply of nerves to the uterus. He says:]

No one doubts that the uterus is susceptible of pain; this is one proof of a nervous connexion between the uterus and the brain as the organ of sensation. No one doubts that an emotion of the mind may excite the uterus to powerful contractions. This is another proof of nervous connection between the brain and the uterus. No one denies that, during pregnancy, the uterus affects synergetically the most distant organs, producing the changes in the mammæ and the gastric disturbances, which are so universal; these facts are explicable by the existence of nervous communications between the uterus on the one hand, and the stomach and mamma on the other. There is no other route than than that afforded by the nervous system. No one denies, either, that after parturition, the breast or the stomach may excite the uterus to action; these facts further prove a reciprocal influence, *from* the stomach and breasts *to* the uterus. Such facts are, in their sphere, as convincing, as though the eye could see a great concourse of nerves running between these organs. A physiological fact is worth quite as much as an anatomical fibre. These communications can only take place through the medium of nerves, and whether there be one channel or many; whether the chief place be given to the spinal fibrillæ of the sympathetic, or to the proper nerves of the spinal cord, the necessity for uterine nerves is equally inexorable. There *must* be nerves, and there must be nerves *sufficient* for the functions to be performed. Anatomical facts can never give the lie to the facts of physiology.

[With respect to the increase in size of the uterine nerves during pregnancy, Dr. Smith observes:]

Those who maintain that the nerves of the uterus do not increase in size during gestation, must show, not only that there is no such increase in the gravid, as compared with the virgin uterus, but they are bound to show that the nerves relatively diminish in breadth during pregnancy; for when we consider the extent and superficies of the fully developed gravid organ, it must be evident to the meanest capacity, that if the nerves of the virgin uterus, remaining stationary as regards size, are merely stretched upon, drawn out, or unfolded, over and in, the enormously increased gravid organ, they ought proportionately to appear as much *diminished* as the growing tissues of the uterus are *increased* in size. The length of the virgin uterus is two inches; of the gravid, at the end of gestation, twelve inches. The weight of the virgin uterus is one ounce; that of the fully-developed gravid organ, twenty-four ounces. The disproportion in size between the fœtus and the adult man is not nearly so great as the disproportion between the virgin and the parturient uterus. If we could conceive the nerves of the fœtus stretched out or unwound in the space of nine months, so as to accommodate the skeleton of the adult, we should have but an imperfect idea of the mechanical marasmus of the uterine nerves at parturition, which we are called upon to believe, if the nerves do not actually grow during gestation.—*London Journal of Medicine, May*, 1849, p. 466.

156.—ON THE ACTION OF THE FALLOPIAN TUBES IN EMBRACING THE OVARIES.—By Dr. W. Tyler Smith.

In the whole range of reflex action, or, indeed, of physiology, there is nothing more extraordinary than the reflex action of the Fallopian tubes from ovarian excitation. There seems a positive instinct, a power of selection, in the exactitude with which their fimbriated extremities find out and embrace the ovaries, but for which, extra-uterine fœtation, with its great dangers, would be very frequent. In this internal embrace, the most perfect adaptation occurs, in the total absence of sensation and volition. Many minds have felt a difficulty in receiving the doctrine of the independent and insentient action of the true spinal marrow, and its excitor and motor nerves, because of the extraordinary adaptation and appearance of design sometimes observed after decapitation or decerebration, being fain to consider such adaptation a proof of the presence of design and will, in the spinal marrow itself. Here, in the case of the Fallopian tubes, there can be no suspicion of volition, and yet the motions of these muscular tubes are so unerring in their power of embracing the ovaria, and of not seizing the intestines or the abdominal parietes, as quite to equal any of those actions which have been supposed to be emotional or voluntary in decapitated animals. *Ibid, p.* 465.

157.—ON THE MODES OF ARRESTING UTERINE HEMORRHAGE.—By Dr. W. Tyler Smith.

[Dr. Smith treats this subject under several heads. He speaks first of]

The different modes of exciting reflex contraction of the uterus in uterine hemorrhage.—Reflex contractions may be excited by stimuli applied to certain organs at a distance from the uterus; by stimuli applied to certain other organs and surfaces in the vicinity of the uterus; and lastly, by stimuli applied to the uterus itself.

[Under the first division Dr. Smith mentions as excitors of contraction, the *mammary nerves* (called into exercise when the child is put to the breast), the *pneumogastric* (when food, hot or cold drinks, or emetics, are taken into the stomach), and the *abdominal intercostal nerves*. Respecting the latter, he says:]

The cutaneous nerves of the abdominal parietes are excitors of the uterus in an extraordinary degree. The sudden impression of cold or heat upon the abdominal surface will almost always excite the most energetic contraction of the uterus affected with inertia, and from which hemorrhage is taking place. We may contract the relaxed and diffuse uterus to a firm ball, by douching the abdomen with cold water from a height; or by plashing a towel, taken out of cold water, upon the naked abdomen; or by suddenly placing the hand, taken out of iced water, upon the umbilicus. If the surface of the abdomen should be cold, the sudden impression of heat produces a similar contraction. In all these instances it is the extremities of the cutaneous nerves of the abdomen which are affected by the stimuli. The result takes place too instantly to permit the belief that any sensation of cold or heat passes through the abdominal parietes to the uterus itself. The extremities of the cutaneous nerves of the abdomen are, in fact, almost as distant from the uterus as the superior intercostal nerves which supply the mammary glands. About the true mode of action of irritation of the mammary and pneumogastric, and the abdominal intercostal nerves, there can be no doubt whatever. These nerves are too remote from the uterus, in their peripheral extremities, to admit of any other explanation save that of the reflex function.

[Under the second division, or organs and surfaces in the vicinity of the uterus, Dr. Smith refers to irritation of the *vulval, vaginal, vesical*, and *rectal* nerves, induced by the application of cold to those parts. He says:]

This group of organs, it will be observed, is in the immediate vicinity of the organ from which the blood flows, and they are in great measure supplied by nerves having the same origin as the uterine nerves. But what I wish to insist upon is this, that all the actions I have been describing are *reflex* in their nature. Physiology repudiates the idea of uterine contractions, excited by means of continuity or contiguity of the organs excited with the organ which contracts. The peripheries of the nerves of the bladder, rectum, vulva, and vagina, receive the impression, and the incident nerves, the spinal centre, and the motor nerves of the uterus distributed to its muscular structure, are all concerned in the muscular contraction which ensues. Though the organs excited are near the uterus, which contracts, the route of the nervous action is precisely the same as it was in the case of the stimuli applied to the mammary or the pneumogastric nerve. I make these observations because I still see the obsolete notion, which so long perplexed physiology, of referring all such actions to the sympathetic nerve, and to the mere anatomical distribution of nerves to neighboring organs from the same source, cited by some authorities as sufficient to account for all such motor phenomena as those which take place between the different pelvic organs respectively. They look at the nerves interlacing and communicating with each other, and their minds do not reach to the necessity of considering the spinal centre as the organ which connects the peripheries of excitor and motor nerves, and without which their contiguity or distance would be equally useless.

I now come to the consideration of the contraction of the uterus, and the arrest of hemorrhage by irritation of the uterus itself, through the medium of stimuli applied to—

The uterine nerves.—The power we possess over the uterus by this means is very great indeed, and the modes by which we can exert it are very various. We may excite the nerves of the external surface of the uterus, the nerves of the internal surface, or the nerves of the os uteri. When we produce uterine contractions by irritating the uterus through the abdominal surface, we act on the first series of nerves; when we inject cold water into the uterine cavity, we act on the second, and when we irritate the os uteri by digitation, we act on the third. These measures are of great importance in our attempts to rouse the uterus itself to action. We may excite the organ by introducing ice into the cavity, by injecting cold water into the cavity, or by injecting stimulating solutions. Dr. Arnott, of Brighton, proposed, I believe, to place a bladder in the uterus, and then to inject the bladder, imagining that the mechanical distention of the uterus would arrest the bleeding on mechanical principles. If, however, such a proceeding were operative at all, it would be on a very difficult principle. Various substances have been proposed for injection into the uterine cavity, and I wonder it has not been proposed to inject the ergot of rye, particularly as it is said that M. Velpeau excited parturient action in the common fowl, by placing the ergot upon the sphincter ani. It would probably excite the internal surface of the uterus, just as sulphate of zinc excites the gastric mucous surface. Besides digital irritation of the uterus through the abdominal parietes, there is another external mode of inducing uterine reflex action, in the use of the abdominal bandage. The compression of the uterus thus occasioned, increases uterine action, or evokes it when it has disappeared; it is certainly one of the best means we have of preventing that inertia of the uterus after delivery which so strongly tends to hemorrhage.

The introduction of the hand into the uterus, or the irritation of the os uteri by the fingers, or the whole hand, excite the uterus very powerfully. Besides the mere introduction of the hand, irritation of the internal surface of the organ by the tips of the fingers is sometimes practised. A very recondite mode of arresting uterine hemorrhage was suggested by Sig. Majoni, an Italian physician. He proposed to inject the umbilical vessels with cold fluids or astringent solutions, and Professor Muller appears to speak fa-

proving of the practice. The very act of hemorrhage itself sometimes supplies the source of irritation which prevents further loss of blood. After blood has been poured out, firm coagulation takes place, and the coagulum becomes a salutary irritant to the uterus. In this list of uterine local excitants, I may mention certain obstetric manœuvres, which, though often performed with other intentions, act upon the same principle as those which I have now been considering. For instance, in hemorrhage occurring before the rupture of the membranes, the liquor amnii is evacuated. This is generally done with a view of lessening the size of the uterus, and of diminishing the quantity of blood which circulates in its structure, and also of bringing the child into immediate contact with the uterine surfaces, after the manner of a plug. But besides this, the body of the child becomes an excitor of reflex action. So also, in cases of placenta prævia, whether the rash plan of tearing away and extracting the placenta, or the old method of separation of placenta and turning, be adopted, the hemorrhage is arrested partly by the fœtus acting on the principle of a plug, but partly, and still more, by the contraction of the uterus consequent upon the irritation necessarily incurred in separating the placenta. When the placenta is extracted, the fœtal head comes into immediate contact with the excitor surface of the os uteri. When turning is resorted to, the extremities and trunk of the child become uterine excitors.

Now, in all these varied actions, the excitor nerves, the spinal centre and the motor nerves are concerned. The uterus does not contract simply and singly from any inherent power belonging to the organ itself. Its actions from these sources of excitation depend mainly on its connexion with the spinal marrow. Doubtless there are other forms of action mixed up with those which are purely reflex, and to those I shall presently revert; but what I would contend for is, that much of the uterine action consequent upon irritation of the uterus itself, is as strictly reflex, as much produced through the medium of incident and motor nerves, and the spinal centre, as are the uterine actions caused by irritation of the mammary or rectal nerves. This is what I cannot too much insist upon.

The different modes of exciting direct or centric spinal contractions of the uterus, in uterine hemorrhage.—If we administer a dose of the ergot of rye to a patient suffering from hemorrhage, we observe in many cases that uterine contraction will follow. The fact has been known extensively enough, but the question has never been properly asked, how does the ergot act? or if asked, the question has certainly never been answered. It has been said, confusedly, that ergot has a special action on the uterine contractile fibre, or that it excites the nerves of the uterus; and these vague sayings have satisfied, or seemed to satisfy, the obstetric mind. I have no doubt that the true channel through which the ergot acts is the blood, and the organ it reaches and affects, through this channel, is the spinal centre. We may illustrate its *modus operandi* by referring to the action of emetic substances on the stomach. There are certain substances which, when taken into the stomach, immediately excite all the motor actions of vomiting. This happens, for instance, when sulphate of zinc comes into contact with the mucous membrane of the stomach. Sulphate of zinc, then, appears to excite the actions of vomiting in a reflex form. If there are any such medicines adapted to produce uterine action, by simple contact with the uterus, just as cold water does, they remain to be discovered. But again, in the case of the stomach, there are other medicines—the potassio-tartrate of antimony, for instance, which acts as an emetic only after it has been taken into the circulation, and which acts more promptly when injected into the blood itself. I believe the action of this medicine to be perfectly analogous to the action of the ergot of rye; that the one acts upon the medulla oblongata and the motor nerves of vomiting; the other, upon the lower medulla spinalis, and the motor nerves of uterine action. The ergot, therefore, is a remedy of centric utero-spinal action. We shall presently see

that these inquiries in the mode of action of remedies are not without a practical use. The ergot, in addition to its utero-spinal actions sometimes produces vomiting, thus affecting the medulla oblongata, as well as the lower segments of the spinal centre, but it is remarkable that, though an excitant of motor action in these instances, it diminishes the frequency and force of the heart's action. This action of the ergot is favorable in some cases of hemorrhage, but unfavorable in others, where failure of the circulation, and dissolution, appear to be imminent.

2. Ipecacuanha is another medicine which is sometimes given in uterine hemorrhage. This medicine, by its emetic action, excites contraction of the abdominal muscles, and compression of the uterus, which in turn may re-excite some amount of uterine reflex action, but over and beyond this it appears to have a special action upon the uterus, increasing its contractile power beyond what we could imagine to occur from the merely secondary effects of vomiting. Ipecacuanha, then, appears to influence both the medulla oblongata and the lower medulla spinalis. This double action of ipecacuanha upon the two extremities of the spinal centre is very extraordinary. It would be worth while to try, in uterine hemorrhage, the effect of an injection of sulphate of zinc, with a view to ascertain whether it exerts the same specific influence on the lining membrane of the uterus and its nerves, as it does upon pneumogastric nerve in the stomach.

3. Opium is also, in hemorrhage, a remedy of direct spinal action. In moderate loss of blood it undoubtedly promotes uterine contraction, and arrests the flow of blood. A good deal has been said and written about this and other remedies acting beneficially, by equalizing the circulation of the blood; but this is an explanation utterly incompetent in the case of hemorrhage from the uterus after delivery. Opium is an excitant of spinal action of the direct kind, and thus it is that its administration is beneficial in hemorrhage, with uterine inertia, and injurious in puerperal convulsion, of the active kind. In both disorders its use and abuse have been empirical, and but little understood.

4. As a minor remedy of the same spinal relations as the foregoing, the biborate of soda may be mentioned. It may be said, briefly, that all stimulants taken into the stomach and received into the blood have a centric spinal action in hemorrhage from the uterus.

5. But one of the most important agencies of a centric kind, and one different in its nature from the foregoing, consists in the influence of emotion. The former actors have been physical in their nature; this is purely psychical in itself, though its effects are evident in material motor contraction. In some cases of dangerous hemorrhage, the mere arrival of the accoucheur in whom the patient places confidence, will be sufficient to contract, for a time, the uterus, and restrain the loss of blood. Hence the control of all outward signs of apprehension in the obstetrician is of the utmost moment to his patient. A depressed look, or a faltering word, may destroy a life which hopeful words and a strong will would have saved. It is remarkable as exemplifying the influence of emotion, that when a hemorrhagic patient is sensible, so as to know her child, the act of suckling the child is much more efficacious than when she is insensible; though, as I have shown you, insensibility in no wise lessens the vigour of the reflex actions. Where sensibility is present, the influence of emotion comes in aid of the reflex action. It is also more efficacious for a woman to suckle her own child than that of another person. It is only the hopeful and confident emotions which excite muscular contraction. The depressing passions paralyze the uterus as well as other muscles, and they are, in truth, not unimportant as causes of hemorrhage.

[Dr. Smith next speaks of "the different modes of exciting uterine action by stimulating the muscular irritability of the organ," as distinguished from the excitement of muscular action through the nerves. He mentions three methods by which this is performed: the application of cold, mechanical

irritation with the hand, and the use of galvanism. With regard to the latter, he says:]

In patients perfectly paraplegic, with entire loss of reflex uterine power, the uterus has been excited to contractions sufficient to expel the fœtus by means of galvanism. Dr. Radford, of Manchester, applied this power to the arrest of uterine hemorrhage. One pole of a galvanic trough being placed within the os uteri, and the other applied over the fundus, it has been found, that, on making and breaking the galvanic circle, powerful uterine contractions occur. It is said that the uterus can be made to contract by this agency when it will obey no other stimulus, and I have little doubt that this is correct. It accords with all we know of the influence of galvanism upon the muscular fibre. The contraction of the uterus from galvanism is probably the most simple mode in which we can act upon the irritability of the muscular fibre without complicating it with reflex actions. The reflex actions excited by passing galvanic currents through muscles are very slight, if they occur at all. This is proved by a great number of experiments. There is, however, one important disturbing agency in the application of galvanism, which must be taken into account. The application of this remedy, and the painful sensations it excites, disturb the emotions considerably. In some cases the emotional excitement increases the influence of galvanism; in others, it weakens or suspends it altogether. This is probably the reason why, in some cases, galvanism has produced little or no contractile effects.

The different modes of arresting uterine hemorrhage mechanically.—1. There are various modes of compressing the uterus mechanically, which are resorted to in cases of hemorrhage. One mode is that of grasping the uterus through the abdominal parietes, and holding the organ so firmly as to prevent the further effusion of blood, while other means are being applied to ensure the permanent contraction of the organ. Another mode sometimes followed is that of introducing one hand into the uterus, and then exerting pressure with the other hand externally, so as to compress the bleeding portion of the organ between the two hands. A third mode of mechanical arrest, and one which is exceedingly useful, consists in the abdominal bandage, made to embrace the pelvis tightly, and having several towels or napkins folded into a conical shape placed underneath. I have mentioned to you the proposal to distend a bladder within the uterus, with a view to distend the uterus mechanically, and so arrest the loss of blood; but this is mechanism carried to mischievous excess, and with a total forgetfulness of the fact, that the distention of the uterus must distend the gaping mouths of the vessels from which the blood escapes.

2. Compression of the aorta, so as to cut off the supply of blood to the uterus, and prevent arterial hemorrhage, has been insisted on by Baron Dubois, M. Chailly, and others. Several years ago, I pointed out that the directions given by obstetricians were wrong, and that we should make pressure upon the inferior cava instead of the aorta. The great hemorrhages, those which kill, are from the veins, and not from the arteries, and further, not from the veins which are returning blood, from the uterus, but from the vena cava and the heart itself. When the uterine veins are open, there is a great column of blood between the uterus and the right auricle, to the sudden escape of which there is no let or hindrance except uterine contraction.

In those patients who have died from loss of blood, injections driven into the inferior cava from the right auricle readily escape into the uterine cavity by the uterine veins. Compression has been successful because it has been difficult or impossible to comply with the directions for pressing upon the descending aorta without, at the same time, compressing the inferior vena cava. The compression of the great vessels is, however, at best palliative, not curative, but it may give time for the application of other remedies.

3. The various form of plugging the vagina and the uterus are a distinct class of obstetric remedies in hemorrhage. Mechanical plugging is extremely useful in hemorrhage in many forms of abortion, in certain hemorrhages during delivery, and in cases of placenta prævia. The sponge or linen plug is useful in moderate floodings of the impregnated, and also of the unimpregnated uterus. This form of plug, when it fills the whole of the vagina, acts by preventing the escape of blood externally; this favours the coagulation of the blood effused behind the plug, and though the plug itself does not reach to the bleeding surface, the coagulated blood is converted into a secondary plug, which acts directly upon the mouths of the bleeding vessels. But besides the common form of tampon, we often convert the fœtus itself into a plug, having precisely the same mechanical action. Thus when, in hemorrhage before delivery, we rupture the membranes, besides the other results, the body and limbs of the fœtus comes into direct contact with hemorrhagic tissue. So in placenta previa, when the presentation is allowed to remain, but the placenta is torn away, the fœtal head becomes in effect a tampon to the os and cervix uteri of the most powerful kind. Again, when turning is performed in these cases, the feet are brought down, and engaged in the os uteri as a plug. These instances only differ from the plug of sponge or linen in their being more effective, and in being applied from within instead of from without. After delivery, no form of plugging can be of much service.

The arrest of uterine hemorrhage by astringents and refrigerants.—This exposition of the principles of treatment would be incomplete without referring to the action of astringents and refrigerants. These remedies, consisting of the acetate of lead, the mineral acids, alum given internally, and used in the form of injection, the sustained application of local cold, &c., are useful in all hemorrhages which do not proceed from patulous vessels sufficiently large to require the contraction of the muscular organ in order to close them, or when the uterus is so far undeveloped as to render its muscular contraction impossible. Here we are restricted to mechanical remedies and medicines of the class I am considering. Such are hemorrhages occurring in the course of uterine disease, or in menorrhagia; uterine floodings in the early months of pregnancy, and the profuse lochial discharges which sometimes occur a few days after delivery, when the uterus has become perfectly contracted.

Such are the principal modes of arresting uterine hemorrhage. They are more numerous and interesting than pertain to any other organ of the body. This is natural enough, when we reflect that the uterus is the only organ which secretes a sanguineous fluid physiologically, and that it affords the only instance in which large bloodvessels with open mouths, leading to fatal hemorrhage, may be but the slightest conceivable divergence from a physiological process, in the separation of the maternal and fœtal circulations after delivery. You may observe the profusion of appliances which we possess for the arrest of uterine hemorrhage. There is no other malady which can afflict the human frame, in which we have such an absolute fertility of remedies. Yet parturient women are constantly perishing from hemorrhage. The truth is, that the many remedies for hemorrhage have been so jumbled together, and so ill understood, that they have never been used in the systematic manner they really admit of. The methods of obstetrication have been ample enough, but the directions for their selection and combination have been deficient. You have seen how susceptible all the remedies in this grave and important casuality are of physiological arrangement; how, indeed, the mere touch of physiology has been sufficient to marshal them in something like due order and proportion. It would, I am sure, be impossible to find any subject within the entire range of medicine, of equal importance, of which this might be said with more perfect truth.

Thus you see how profoundly physiology impresses itself upon our therapeutics in the treatment of uterine hemorrhage. It will not do for those

who are too idle to study the matter to say—We will be practical—we will leave the physiology of the question to be decided by others. Physiology protests against being thus postponed—it will not be put off—for it is inseparable from practice. Without a physiological comprehension of the points of treatment, what is likely to happen? In the arrest of hemorrhage many remedies will probably be tried, either in succession, or in confused combination; but instead of a judicious combination of the several modes by which uterine contraction may be produced, mechanical means, or reflex or direct actions, will be trusted to alone, in such wise, that though many remedies appear to be used, only one or two principles—and those, perhaps, not the most important—will be invoked. It is just like the old Mithridatic formulary! Thus, suppose cold be applied to the rectum, cold to the abdomen, iced water given the patient to drink, and the child placed at the breast, there is great appearance of activity, but in reality only the reflex action of the uterus has been excited, which would have been equally powerful if only one efficient mode of excitation had been tried. Or again, after one mode of reflex action had been tried in vain, the reflex function being exhausted, it would only be waste of time to endeavour to excite reflex action by applying irritation to other incident nerves; yet this is often done. We do not use all the resources which physiology places at our command, unless we call forth, in a dangerous hemorrhage, the reflex spinal action, the direct spinal action, the irritability of the muscular fibre, and apply the mechanical methods of arresting the flow of blood from the uterus.

If, for instance, instead of the jumble of reflex actions, we apply alternate heat and cold to the abdominal surface, give a dose of ergot, irritate the uterus through the abdominal parietes, and grasp it with the hands, we apply all the modes of inducing uterine contraction, and we thus get far more than a fourfold increase of contractile power.

In uterine hemorrhage, neither heat nor cold, continuously applied, excites the full amount of uterine action. They must be applied alternately. A surface exposed to continuous cold becomes at length wholly inexcitor; but now the application of heat becomes powerfully excitor, and after awhile the surface again becomes impressible by cold. In applying temperature to the arrest of uterine action by contraction, these facts should be constantly borne in mind. Whatever the excitor surface acted upon, cold and heat should be applied alternately. This plan both increases and husbands the reflex motor power.

Having laid down the principles upon which the arrest of uterine hemorrhage in all its forms must depend, much would still remain to be said about the measures proper in different classes of cases. No two events can be more different than uterine hemorrhage occurring in the first month of gestation, and uterine hemorrhage taking place shortly after the delivery of the child, and the expulsion of the placenta. In the one case the stream of blood passing to and from the uterus is inconsiderable, the openings from which blood escapes are small, and if the uterus is not contractile, at all events it is not dilatile. But, after delivery, the circulating channels in the uterus are immense, and unless closed by uterine contraction, they must gape widely, and pour forth blood in full streams. We may consider the heart a contractile organ placed at one extremity of a large column of blood, and the contractile uterus at the other. Unless the uterus contracts and supports this column of blood, the result is just the same as though the heart itself were studded with perforations. The treatment of hemorrhage at the commencement and termination of pregnancy must be as different as the nature of the loss of blood, and it must vary considerably in the different epochs of gestation.

Hemorrhage at the commencement of pregnancy must be treated on nearly the same principles as menorrhagia. Cold should be applied continuously with a view to produce coagulation, and to lessen the local circulation. Astringent medicines are useful, as in hemorrhages from other mu-

cous surfaces. The tampon may be used, but simply as a mechanical remedy, to prevent the escape of blood, and thus to favour coagulation at the mouths of the vessels. The uterus must be treated altogether as a non-motor organ.

In the early months of pregnancy, when the motor tissue of the uterus has been somewhat developed, hemorrhages should be treated partly on the plan just laid down, and partly with reference to its contractile power. If necessary, in addition to the above modes of restraining hemorrhage, and promoting coagulation, the flow of blood must be arrested by firm uterine contraction. We should choose the best measures for rousing the reflex and direct uterine action, and that form of action dependent upon its muscular irritability. Much must depend, however, upon whether the ovum has been expelled or not, and upon whether we have or have not abandoned the idea of preventing abortion.

In the later months of normal gestation, plugging the vagina, both for the sake of its mechanical and reflex motor results, should be practised. The moderate application of cold, on the alternate plan, either to the vulva or to the abdominal surface, will be proper, or the use of a cold or purgative enema. But nothing very heroic can be done, until it has been decided whether hemorrhage is of sufficient importance to bring on premature expulsion of the ovum. This point once settled, either that labour must come on in the natural course of things, or that it is justifiable to induce premature delivery artificially—everything becomes simple. We should prepare for the direct action of the spinal marrow by administering a dose of the ergot, and then we should proceed to puncture the membranes. The latter measure, as I have already described, powerfully invokes the reflex actions of the uterus, and converts the body of the fœtus into an efficient plug. In hemorrhages occurring at the time of parturition, before the delivery of the child, these measures should, in severe cases, be had recourse to without hesitation. In many cases, however, simply rupturing the membrane will be sufficient. This should invariably be practised. I am here speaking of cases in which the placenta is attached to the fundus uteri.

When the placenta is attached to the os or cervix uteri, the hemorrhage which follows the separation of the placenta is called *unavoidable;* when the placenta is planted at the fundus, the hemorrhage attendant on its separation is called accidental. There is, however, very little, if any meaning in these two terms thus applied. Whenever separation of the placenta has taken place, whether at the os or fundus uteri, hemorrhage is inevitable and unavoidable, unless the uterus is either contracted, or unless some mechanical pressure is made on the separated surfaces.

In the hemorrhage of placenta prævia occurring before the term of natural labour, the great object is to arrest the hemorrhage, if possible, so as to preserve both mother and child until the end of gestation, or at all events, until the fœtus becomes viable. At the time of parturition there is no safety but in the delivery of the mother, and repressive measures are only necessary until the uterus is in a state to admit of turning. The only modes of restraining or repressing hemorrhage in placenta prævia, when the placenta has begun to separate, are by plugging the vagina and keeping the circulation as quiet as possible. But the efficient remedy for the arrest of the flooding is delivery by turning. The very operation of turning converts the hand and arm of the operator into a plug, and when the feet are brought down, they and the body of the fœtus in turn plug the os and cervix so effectually, that further hemorrhage is impossible. I am not here speaking of the propriety of saving the child, but of the mere arrest of hemorrhage.

When the placenta becomes entirely separated, or is removed artificially the head of the fœtus, instead of the feet, becomes turned into a tampon,

Besides the plugging effect, there is, as I have before observed, a large amount of reflex action called forth by turning, or by the substitution of the head of the child for the soft placenta at the os uteri. In turning, the muscular irritability of the uterus is necessarily stimulated. In these cases, the evacuation of the liquor amnii is to be avoided, if possible, lest it should render the turning more difficult, and the ergot of rye, and other centric stimuli are improper, for the same reason.

Hemorrhage occurring after delivery, from the entire or partial separation of the placenta, with uterine inertia, calls for all the resources of our art. If the placenta should only be partially separated, that viscus should be entirely detached and removed. This operation, by exciting the muscular and reflex powers of the uterus, will often arrest the hemorrhage at once. When hemorrhage occurs after the complete evacuation of the uterus, the inertia upon which it depends may be either partial or entire. When the inertia is partial, the uterus contracts sufficiently to expel coagula or large gushes of blood from time to time, thus giving palpable evidence of the jeopardy of the patient. But in total inertia, there is no discharge of blood per vaginam; the uterus is too feeble to expel the vital fluid effused into its cavity, and the organ becomes immensely distended and diffuse. The beat of the heart fails or ceases, the temperature falls suddenly, the functions of the brain are suspended, and the patient is suddenly precipitated into the very jaws of death.

In either case, whether the hemorrhage be internal or external, if it has taken place to a dangerous extent, the vital powers must be carefully and instantly preserved, and every possible measure taken to prevent further loss of blood, and to ensure the contraction of the uterus.

The vessels of the uterus should either be compressed mechanically, between the hands, or the venous and arterial flow of blood from the heart should be prevented by pressure on the aorta and inferior cava.

Stimulants (brandy, as the strongest, is the best) should be given by the mouth; the head of the patient should be kept low, as the continued action of the heart will depend greatly on the state of the cerebral circulation. The inferior extremities should be raised, and it has been recommended to place ligatures, or tourniquets, upon the extremities, in order to reinforce the circulation as much as possible. As quickly as may be, the ergot of rye should be given with the stimulants, to ensure the direct action of the spinal marrow upon the uterus. This form of action may be excited even after the uterus refuses to obey stimuli of reflex action.

The reflex actions should be excited by *alternate* cold douching and warm applications to the abdominal surface and vulva, and by the application of the child to the breast, or by causing the nurse to suck the breasts. The drinks should be given cold or iced, to stimulate the pneumogastric nerve.

The muscular irritability of the uterus should be stimulated either by irritation through the abdominal parietes, the application of galvanism, or the introduction of the hand into the uterus. Where the latter is resorted to, the uterus should never be injured by improper pressure. Irritation, not force, is required.

Here we have exhausted and combined all our most potent remedies; but they will rarely fail, when properly directed, unless, indeed, the patient is already cadaveric when they are commenced. There is no malady in which the sudden danger to life is greater than in uterine hemorrhage, but fortunately there is no contingency in which the resources of art are more powerful or numerous. *Lancet, Dec.* 16, 1848, *p.* 656.

158.—ON THE PRINCIPLES OF TREATMENT IN UTERINE HEMORRHAGE.—By Professor MURPHY, University College.

In the mode of arrest, uterine hemorrhage differs essentially from hemorrhages in other parts of the body. In the latter case, the exposed vessels have inherent provisions for retarding the escape of blood. Those of the uterus depend altogether upon its contractile tissue; and hence, as in general hemorrhages one of the great objects of treatment is to cause contraction in the coats of the vessels themselves, so in flooding from the uterus the chief effort is to excite and to maintain the contractility of the uterine fibres. In consequence of this intimate connection between the vessels of the uterus and its muscular fibres—the absolute dependence of the former on the latter—it is essential in the treatment of floodings to pay much more attention to causes that impair muscular contractility, than is required in the treatment of other hemorrhages. The nervous energy of the uterus must be preserved; and for this purpose a line of treatment is called for that would be quite inapplicable in general hemorrhage.

[Professor Murphy illustrates this principle by a reference to the means useful in controlling general and uterine hemorrhage respectively. Thus *syncope* is an efficient means of arresting general hemorrhage, while it is a dangerous symptom in flooding. *Coagulation of blood* is one of the chief agents by which a lacerated artery is closed; but coagula in the womb are often sources of danger. *Cold* is useful in all hemorrhages; but in flooding we should only refrigerate locally, and so as not to depress the general circulation—otherwise evils would arise.]

Cold, Dr. Murphy says, may be employed, also, on another principle—as a stimulant to the uterus; in this way its beneficial effect is most remarkable. The contractile power of the uterus is often so impaired by severe flooding that it is extremely difficult to excite its action. In such cases, a stream of cold water poured from a height on the uterus will stimulate it to contract; but even when employed in this manner, a strict attention must be given to support the action of the heart.

This principle did not escape the attention of the observant Gooch. He mentions the case of a lady that he attended, in whom, both before and at the time of labour, the force of the circulation was very great; "she was flushed and had a quick pulse." After delivery, she had a most violent flooding; and Gooch remarks that, "after the violence of the hemorrhage was over, although the abdomen was covered with pounded ice, it returned again and again, slightly in degree, yet sufficiently, in the debilitated state of the patient, to produce alarming occurrences of faintness; the uterus too, which had become firm and distinct, became so soft, it could no longer be felt. Finding the ice so inefficient, I swept it off, and taking a ewer of cold water, I let its contents fall from a height of several feet upon the belly; the effect was instantaneous; the uterus, which the moment before had been so soft and indistinct as not to be felt within the abdomen, became small and hard, the bleeding stopped, and the faintness ceased—a striking proof of this important principle, that cold applied with a shock is a more powerful means of producing contraction of the uterus than a greater degree of cold without the shock." We might also add, that this case is an equally powerful evidence of the importance of uterine contraction in stopping hemorrhage.

[*Astringents* and styptics are useful in general, while they have little power in uterine hemorrhage; *stimulants*, on the other hand, are almost indispensable in flooding, but mischievous in general hemorrhage. Stimulants act beneficially in uterine hemorrhage not only by supporting the powers of the system, but by exciting uterine contraction, which is the great point we should have in view. Speaking of this class of remedies, Dr. Murphy says:]

Opium is another remedy of essential value in uterine hemorrhage, but one whose agency seems to me to be much misunderstood; it is chiefly

viewed as a sedative, and its use shunned lest it may prevent contraction of the uterus. The paradox has been proposed, How can opium cause the uterus to contract in hemorrhages, and to relax in other cases; for instance, when given for this purpose in arm presentations? The same medicine cannot produce opposite effects on the same structure. In this query the condition of the nervous system, a most essential element, is totally overlooked, and the influence of opium, when nervous irritability is almost exhausted, is compared with its effect when the same power is excited to the greatest degree. It is assumed that the operation of opium must be the same when the uterus has lost all power to contract, and when it is contracted spasmodically. The question therefore might easily be answered, by stating that opium is both a stimulant and a sedative, and that one effect or the other is produced, according to the relation existing between the nervous energy of the uterus, and the does of the medicine given. If nervous irritability be not impaired, or if it be increased, a very small dose of opium would stimulate; a larger one would exhibit its sedative effects; but if, on the contrary, that irritability is destroyed, and the uterus atonic, the same large dose would only act as a stimulant; nor will the sedative property of the medicine be observed until the nervous energy is restored.

The truth of this fact I have frequently observed in cases of extreme flooding. The usual dose (mxxx.) of tincture of opium, had been repeated again and again, before any effect was observed either on the uterus or on the patient. As soon, however, as the nerves were roused to activity, the uterus began to obey the stimuli employed for its contraction; the pulse to return; the respiration to become more easy; the restlessness of the patient less; and, in proportion as nervous influence was established, the sedative effect of the medicine became manifest; thus a sound and tranquil sleep, even for a short time, was the most certain evidence that the contractility of the uterus had returned, and was the most favorable symptom of the patient's safety.

In the use of opium, therefore, strict attention should be paid to the degree of hemorrhage, and its effect on uterine contractilty. When the loss of blood is slight, or at least not sufficient to impair the tone of the uterus, a large dose of opium would be dangerous, lest it might act as a sedative, overcome the influence of the nerves, and cause the uterus to relax. When the loss is great, and followed by exhaustion of the uterus, then the very same quantity of the medicine will produce an opposite effect; it will act as a stimulant, and cause contraction of the uterus.

Ergot of rye is perhaps the most popular remedy in uterine hemorrhage, because it acts specially on the contractile tissue of the uterus; it is a specific stimulant, and excites contraction of its fibres. Its popularity, however, has led to a very indiscriminate use of the medicine, and although often successful, it just as frequently has failed in its effect. A great deal of this uncertainty is attributable, it is true, to the variable quality of the drug; no medicine is of more doubtful efficacy; but I think that its failure in extreme floodings arises, in many cases, from a misapplication of it. It is given as a specific, when it is impossible that any specific effect could be produced. In order to excite the action of this, or of any other medicine, the nervous system should be capable of conveying the necessary impressions; but when this is not the case, secale cornutum cannot stimulate the uterus; nevertheless, if it regain its irritability, or if ergot be given before the uterus has lost its tone, in either case its efficacy is undoubted, and it may be usefully employed. Assuming this explanation as true, ergot of rye may be contrasted with opium. When the nerves of the uterus have lost their natural irritability, and the uterus is in a state of atony, opium is the most efficient excitant to its action, because it then acts upon these nerves as a most powerful stimulant; but when that irritability is restored, or if it be only slightly impaired, it acts as a sedative and may paralyse the uterus. Ergot of rye, on the contrary, is quite inefficient in nervous ex-

haustion of the uterus, because, so far from acting as a stimulant, it seems to have a sedative effect (at least upon the heart), while its specific action is obvious the moment that exhaustion is removed. Opium is therefore of the highest value in saving a patient from the consequences of extreme flooding; ergot of rye, in preventing such hemorrhage from taking place. Both remedies may be used in the same case, but one can never supply the place of the other.

Direct irritation of the uterus is a most efficient aid in promoting contraction of the uterus. Friction over the surface has constantly been observed to excite contraction of its fibres; but so slight an irritant frequently fails in arresting hemorrhage, simply because it is only partial in its effects; it does not secure a uniform and equable contraction of the uterus. For this purpose strong compression with one or both hands on the fundus, and irritation not only of the anterior but of the posterior surface of the uterus, is essential to secure the object. It is often necessary to maintain this state by a continuance of very strong pressure afterwards, which we shall have again to refer to. The introduction of the hand into the cavity of the uterus is a practice founded on the same principle. This manipulation causes great irritation—sometimes too great irritation—and, therefore, requires prudence and caution in its adoption. In cases of great exhaustion I have known it followed by convulsions and death, but in other instances it proved the only means (accompanied by external pressure) of causing an uniform and efficient contraction of the uterus. Much depends on the condition of the patient. When it is adopted as a "dernier ressort" to excite a flaccid uterus, the shock of the operation sometimes overcomes the patient, already in the last stage of exhaustion, and she never rallies. Such an application of this means is, therefore, extremely dangerous; but when the uterus is in a semi-contracted state, possessing a certain degree of contractility, the hand may be introduced with benefit. The uterus which is often only partially and irregularly contracted, is restored to its proper order of contraction; and when the fundus is supported by external pressure, the hand is expelled, and the hemorrhage ceases. Dr. Gooch recommended the introduction of the hand for another purpose; he supposed that the placenta might be compressed against the walls of the uterus, and hemorrhage thus stopped. I confess that I cannot see the advantage of this practice; passing the hand into the cavity of the uterus is no trifling operation; but if you undertake it—if you succeed and reach the placenta—if it be detached—why not take it away.

[After mentioning *electricity*, as suggested by Dr. Ramsbotham and introduced by Dr. Radford, as a means of contracting an atonic uterus, Dr. Murphy refers to *compression of the abdominal aorta*, proposed by Baudelocque. He says:]

We cannot well compress the aorta, without also compressing the cava and bifurcation of the iliac veins, which seems to me of equal if not of greater importance, because the veins are a great source of flooding, and, if we can prevent the regurgitation of blood from these great trunks into the uterine veins, an important means of prevention is accomplished.

[Lastly, Dr. Murphy mentions *transfusion*, which he thinks ought to be tried in extreme cases, when there is no reasonable hope of doing any good by other means.] *Medical Gaz., Dec.* 1, 1848, *p.* 912.

159.—ON ACCIDENTAL HEMORRHAGE.—By Professor MURPHY, University College.

The treatment must be prompt and decisive. Accidental hemorrhage usually occurs in the first stage of labour, when the membranes are unbroken, and the liquor amnii prevents the uterus contracting about the body of the child. In order, therefore to control flooding, the uterus should be

made to contract as much as possible, and coagulation promoted in the spongy structure of the placenta; both objects are accomplished by rupturing the membranes, because the uterus contracts on the body of the child, and the placenta being compressed between both, the blood is prevented escaping so freely from its uterine surface. This effect may be rendered more perfect by using means to increase the tonic contraction of the uterus, which rupturing the membranes alone will not always accomplish. Therefore, ergot of rye, or the electric current, may be used; a drachm of the former infused in a wine-glass of water, may be given alone, or, what is better, in combination with opium. Thirty or forty miniums of tincture of opium may be added to the infusion, and in proportion as exhaustion increases, larger doses of opium may be repeated. When you wish the aid of the electric current, the electro-magnetic apparatus should be employed, and currents passed either transversely or in the longitudinal axis of the uterus: rods, holding sponges moistened in a saline solution, are connected by wires to the apparatus, and may be applied to any part of the abdomen; a sponge may be introduced within the vagina, and connected in the same manner with the battery: by these means currents may be made to pass in any direction. The only objection to this mode of exciting the uterus is the delay which might arise in preparing the instrument. Entrust the management of these details, therefore, to an assistant, and do not lose a moment in carrying out the treatment of the case, independently of this agent.

[Speaking of the practice of *plugging* the vagina, as recommended by Leroux, Dewees, and Burns, Dr. Murphy says:]

With regard to this point of practice, I have no hesitation at all in deciding in favour of rupturing the membranes; I have never found it fail, but the plug employed as a substitute is evidently liable to grave objections: a coagulum in the vagina can have no effect on vessels in the body or fundus of the uterus: are we then to wait until the coagula increase so as to stop these vessels? If so, the placental side of the uterus must be wholly filled with coagula, and even then it is doubtful whether they could prevent the hemorrhage. You may, therefore, plug the vagina, and fancy the hemorrhage has ceased because no more flows externally, but the symptoms of exhaustion rapidly accumulating will soon convince you of your error.

If the membranes are ruptured, the vagina may then be plugged, as a temporary expedient, because, although some coagula may collect in the uterus, the quantity must be small, and the amount of blood lost would be less than if it flowed uninterruptedly from the vagina; but even on this topic I cannot speak without some hesitation. I confess I like *to see* whatever discharge may flow from the uterus, nor do I feel satisfied so long as there is the least trickling of blood. If the vagina were plugged, I could not tell whether the hemorrhage had completely ceased, and might be deceived by the absence of all external appearance of hemorrhage.

[*Turning* was formerly a universal practice in cases of accidental hemorrhage. It is now very rarely resorted to, and Dr. Murphy thinks it will very seldom be found necessary. *Stimulants* must be given, even largely, and if all means fail, transfusion may be cautiously resorted to.]

Medical Gazette, December 1, 1848, p. 917.

160.—ON UNAVOIDABLE HEMORRHAGE.—By Professor MURPHY, University College.

[Even in cases of placenta prævia, Dr. Murphy observes, there are natural processes which tend to the arrest of the hemorrhage. He says:]

Let us suppose a case in which the placenta is completely attached to the mouth of the uterus, and that labour has just commenced; what takes place? The first effect of the pains must be to break the vessels passing

from the margin of the os uteri into the maternal portion of the placenta. The curling arteries of the uterus are closed by coagula formed in their torn coats; they cannot, therefore, pour out much blood; such is not the case, however, with the large uterine veins when they are broken across; one fragment is an opening that communicates with the large net-work of veins in the uterus; the other leads directly into the cavernous structure of the placenta; through both these orifices blood may be discharged, being, in the former case, venous blood, flowing in a contrary direction to its course from the uterus, and in the latter, arterial blood, passing directly through the cavernous structure of the placenta, and escaping from the broken openings on its surface. Such being the sources of hemorrhage, does the progressive dilatation of the uterus increase or control the discharge? If the former were true, nature has committed a capital error; she sins against her great law to do nothing in vain, and gives life only to destroy it. If the latter be the case, she is consistent with herself, and even here establishes the possibility of life being preserved by her own efforts. We shall endeavour to prove the latter hypothesis, and demonstrate to you the manner in which dilatation of the uterus controls unavoidable hemorrhage. Let us examine the effect of this dilatation on each source from which blood flows. The arterial current through the placenta is in direct proportion to the number of arteries that supply blood to the cavernous structure; but as the dilatation of the uterus increases, this number diminishes, because they are successively broken off from the placenta, and when the dilatation is completed, the placenta being detached, hemorrhage from this source must cease, as the supply is cut off. This provision, however, would always fail if it depended upon the complete dilation of the uterus for success. A certain period of time (some hours) may be occupied in effecting it; and if an uninterrupted current of arterial blood were flowing from the placenta for a very much shorter period, the woman would expire long before the placenta was separated. Some means of retarding or interrupting the current is necessary; and here we find the *importance of the reticulate structure of the placenta;* the blood moves slowly through it, and if it accumulate there is a tendency to coagulate—it acts like a sponge. Any cause compressing the placenta, which may prevent the free discharge of blood from these orifices, will cause an accumulation and consequent coagulation of blood in the spongy structure, thus preventing further hemorrhage. The force of the fundus uteri acting on the cervix also acts upon the placenta, and exercises a pressure upon it proportionate to the strength and frequency of the pains. Thus, if the uterus retain its power, and is in full action, the tendency of its contractions is at the same time to cause and to arrest the discharge of blood from the placenta: to cause it, by breaking the connection with the uterus; to arrest it, by pressure on the whole mass of the placenta. Did hemorrhage, therefore, depend upon this source alone, it would be much more under the control of treatment than we find it. Our chief object, then, would be to increase the counter-pressure on the placenta from the vagina, so as to cause coagulation in its structure. We have, however, to consider another source of flooding, that derived from the exposed veins of the uterus. This venous blood regurgitates from the general venous system, and would flow freely and most dangerously so long as the cervix uteri remained expanded, and no contraction of its tissue took place, because the venous canals, and their openings of intercommunication, are fully dilated; and if any of these be exposed on the surface of the uterus, profuse venous hemorrhage would be the result, so long as they remain in this state. But the dilatation of the os uteri is in fact the contraction of the cervix; the womb would not open unless the tissue of the cervix contracted upon itself. I do not assume that this contraction of the cervix is a muscular effort, as some suppose; it is sufficient for this explanation to admit that the cervix possesses contractility of tissue. Now this contraction of the cervix has precisely the same effect upon the veins here, as the muscular contrac-

tion of the fundus has upon them in other forms of hemorrhage; the sinuses (as they are called) are more or less closed; the veins are compressed: the temporary valves set up, and thus the regurgitation of blood from this source prevented. As the dilatation of the uterus advances, the whole of the exposed portion of the cervix and placenta is directly compressed by the head of the child; an additional aid in preventing the escape of blood.

The natural means, therefore, of checking unavoidable hemorrhage, is, the complete separation of the placenta from its attachment to the cervix of the uterus, because by this means all the uterine arteries are broken off from the placenta, and the veins are closed by the dilatation of the uterus which is necessary to effect the separation. If we have rendered the design of nature sufficiently intelligible, you can readily perceive why she often fails in accomplishing her purpose, and why these hemorrhages are so dangerous. In order to effect the dilatation of the uterus, and carry out this intention, the pains must be vigorous, and the contractile power of the uterus unimpaired: but unfortunately, in too many cases this essential element is wanting. Slight hemorrhages may have occurred before labour, so as to weaken the tone of the uterus, or, what is more frequent, the first opening of the womb, the first rupture of the blood-vessels, is followed by such a violent gush, that the patient is exhausted, the action of the uterus is enfeebled, and the pains consequently weak and inefficient. As they proceed, and slowly separate the placenta gushes of blood from newly ruptured vessels accompany every pain, increasing the exhaustion of the patient and the atony of the uterus, until at length the uterus has lost all power of accomplishing this object, and the patient expires. Such hemorrhage is equally fatal to the child, because the fœtal blood is deprived of all influence from the maternal circulation; the necessary changes are not carried out, it receives no nutrition, and dies equally exhausted. The child is generally said to die from hemorrhage of the fœtal vessels; but the fœtal vessels are not always ruptured, which is a necessary condition; however, it presents the same appearances as if they were: and hence hemorrhage is the cause usually assigned for its death. You will perceive, therefore, that nature has not failed to provide against the effect of this malposition, but that her efforts are generally rendered useless, because exhaustion is so rapidly induced in the patient. She is not, however, always so unsuccessful: cases are recorded where the dilatation of the uterus was accomplished, the placenta detached, hemorrhage arrested, and the patient saved by the provisions of nature alone. Professor Simpson records 141 cases, in the majority of which the placenta was expelled safely by the natural efforts: several have been since reported, a sufficient proof of the correctness of our position.

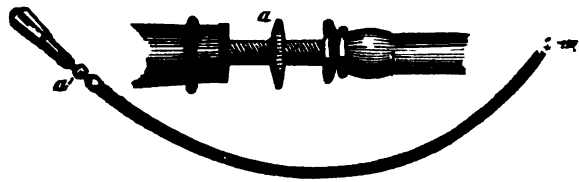
[After speaking of the necessity of promptitude and decision in the treatment, Dr. Murphy proceeds to consider the most favorable cases of unavoidable hemorrhage, namely,]

Cases where hemorrhage is only commencing, and where you are in sufficient time to put any treatment into effect you think proper: what is your chief object? If possible, to save both the mother and child. You know, when the deluge comes, that the child is lost, and it is very doubtful whether the mother may be saved. To preserve the child, it is necessary to remove it from the uterus. To save the mother, the connection between the placenta and uterus must be broken off. If the former were done incautiously, the mother might be sacrificed. If the latter were hastily carried into effect, the child would be destroyed. We must avoid falling into either of these errors, and act upon correct principles in our treatment. To accomplish the objects we have in view, it is necessary to turn and deliver the child; but this cannot be done until the dilatation of the uterus is in some degree advanced, or at least until the os uteri is quite dilatable. *Never attempt to force open the mouth of the womb* for this purpose. Our first step is therefore to use the most efficient means to arrest the discharge

while the uterus is dilating. This may be effected, 1st, by directly compressing the placenta; 2d, by maintaining and increasing, if necessary, the action of the uterus.

[Compression of the placenta is effected, 1st, by plugging the vagina, for which purpose Dr. Murphy recommends balls of tow loosely rolled up, and supported by a napkin soaked in ice-water and applied to the vulva; and 2d, by puncturing the membranes and allowing the liquor amnii to escape.]

For this purpose, (says Professor Murphy), a long gum elastic catheter of the largest size may be made, so as to have a pointed stilette to pass quite through it: this can easily be prevented passing beyond a certain distance, by a button or screw at the end opposite the point.



Gum elastic catheter, with spear-pointed stilette passing through it.
a Screw-nut to sheath the point.

This instrument, having the point sheathed, may be passed within the os uteri, between the placenta and the cervix; and when it is quite above the placenta, the point can be pushed forward through the membranes; the stilette being then withdrawn, the liquor amnii will flow away chiefly through the catheter. This operation should, of course, precede the use of the plug. The source of hemorrhage being thus secured, we must direct our attention to the second object.

[In the fulfilment of the second indication, that of maintaining or increasing uterine action, if there is not much exhaustion or nervous irritation, we may give a *moderate* dose of ergot. But usually the hemorrhage is of such amount as to lead to great exhaustion.]

All the aids, therefore, to support the general circulation, and to remove nervous depression, must be called into requisition, in order that the action of the uterus may continue: stimulants, with opium, may be given internally, the temperature of the extremities maintained by wrapping them in warm blankets, and applying hot jars to the feet. A free circulation of pure air in the apartment should be secured, and the patient kept completely in the recumbent position. While these steps are being taken to arrest the consequences that you know will follow such symptoms, the delivery of the child, the most important one, will, of course, occur to you: the only question is, when should it be done. I would say, the moment symptoms of exhaustion begin to appear: if you wait for their full development, it would be better not to venture upon such an operation: and if such symptoms are not present, it would be desirable to delay a little, in order to give the uterus time to dilate sufficiently to pass the hand easily within it. If, however, the patient shows evidences of commencing exhaustion, you must deliver at once.

Turning the child is at any time a serious operation, and in no case more so than under the circumstances we are at present considering: not because the operation is then peculiarly difficult; on the contrary, in consequence of hemorrhage, the uterine fibres offer less resistance than usual to the introduction of the hand, and the accoucheur has consequently much less difficulty than when the uterus is strongly contracted on the child, but it is an operation attended with considerable danger, from the shock the patient receives. The records of midwifery afford ample testimony of the fatality of turning in unavoidable hemorrhage, chiefly because the patient was too exhausted to support the shock of the operation. She either died immediate-

ly, or in a few hours afterwards. In the case supposed, however, no such objection exists. You proceed to deliver the moment exhaustion shows itself, or before that, if the os uteri is sufficiently open for the purpose. If the labour has continued for some time without exhaustion in the patient the outer plugs may be removed, and a vaginal examination cautiously made: you will generally be able to ascertain the degree of dilatation without disturbing much the plug in contact with the placenta: if the os uteri is one half dilated, you may deliver.

[Dr. Murphy then proceeds to speak of cases in which the practitioner is not *sent* for early, but finds the patient suffering all the worst consequences of flooding.]

When the patient is in extreme exhaustion.—If you were to adopt the same practice as that we have just described, in such a case as this—if you were at once to turn the child and deliver—the fate of the patient would be sealed. The late Dr. Rigby justly observed, that "the success of turning depends upon its being done before the patient has lost too much blood," and the fatal effects of performing it too late, when the patient is extremely exhausted, will be best understood from a few examples.

[After relating a number of examples in which turning was performed while the patient was in a state of great exhaustion, and death followed; and also cases in which delivery was accomplished by the natural efforts, and the patient recovered, Dr. Murphy says:]

I trust we have succeeded in pointing out to you the danger of turning the child when your patient is extremely exhausted—in proving to you that, even in these cases, nature sometimes succeeds in arresting the flooding by the separation of the placenta—that when this happens hemorrhage ceases, even where the action of the uterus is suspended. It remains for us to consider whether, in these cases, artificial separation of the placenta may be put in practice. A question springs naturally from this discussion, which I shall not now enter upon—How can hemorrhage be arrested by the separation of the placenta when the uterus does not contract, or at least when we have no evidence of its contractions by the presence of pains? I must leave this, with other problems connected with the circulation, for some future inquirer to resolve. For the present I shall let it remain with that which some time since puzzled the surgeon so much, viz.—When an aneurismal artery (the carotid for instance) is tied on the side of aneurism distant from the heart, why should the aneurismal sac diminish rather than increase? Perhaps the same principal may explain both phenomena.

[Dr. Murphy gives the following summary of the treatment in unavoidable hemorrhage:]

1st. *In a case where no exhaustion has taken place*, or where it is but commencing, to turn and deliver the child the moment the os uteri is sufficiently dilated. If it be dilatable, (and this is generally the case) you may pass through it, although it be not larger than a crown piece. If it be not so, by properly compressing the placenta, and using other means to support the circulation, you will prevent exhaustion increasing until you can deliver the patient.

2nd. *In a case of extreme exhaustion*, with frequent fainting, fluttering pulse rapid, laboured, perhaps stertorous respiration, blowing of the cheeks, jactitations, incoherence, and general pallor and coldness of the surface, do not attempt to turn the child; rather separate the placenta, and leave the child undisturbed, until some decided reaction takes place. I am aware that this rule is a direct infringement on the principle of those who look with horror on the risk of allowing a woman to die undelivered. It appears to me to be the only chance of preventing her death.

3rd. *When the os uteri is rigid*, use every means to compress the placenta, and to increase the action of the uterus, so as to give it time to dilate, and to enable you to turn; but if before that, hemorrhage so increase as to cause

a dangerous degree of exhaustion, separate the placenta, rather than force your hand and arm into the uterus.

Medical Times, Dec. 15, 1848, *p.* 999, *and Jan.* 1849, *p.* 41.]

161.—ON POST-PARTUM HEMORRHAGE.—By Professor Murphy, University College.

[Post-partum hemorrhage may occur either before or after the expulsion of the placenta. In the former case, its causes are three, inertia of the uterus, irregular contractions of the uterine fibres, and morbid adhesion of the placenta. Professor Murphy observes:]

Inertia of the uterus is equally the cause and the effect of hemorrhage. If the uterus become exhausted from long-continued efforts to expel the child, if it be enfeebled by any constitutional cause, hemorrhage is the consequence—at first, perhaps slight, but as the debility of the uterus increases it soon amounts to a profuse flooding: the patient is placed at once in extreme danger, and the practitioner is in equal difficulty to cause an efficient contraction of the uterus. This want of contractile power in the uterus becomes the chief object of his attention.

The symptoms that characterize this condition of the uterus are very different from those that attend a mere suspension of its action after labour. The placenta is often retained simply because the uterus is not sufficiently excited to expel it, and the term "inertia" is as frequently misapplied in the latter as it is correctly used in the former case. You should be careful, therefore, not to confound the one with the other, but to recognize true inertia as soon as it presents itself: you may do so before any hemorrhage takes place, even when the child is being expelled. The fundus of the uterus has not its usual firm feel under the hand: it seems spongy or like dough, and is larger than it ought to be, because it very seldom contracts to its full extent. After the delivery of the child, when the uterus generally remains contracted, it will not do so. You may have followed the contracting uterus with the hand, moderately compressing it, and in a short time you find that it has eluded your grasp, and cannot be felt. Strong frictions over the lower part of the abdomen may again excite its action: but it is only for a moment,—again it is lost. While this want of tone may be observed in the uterus, a corresponding amount of constitutional irritation may be noticed in the patient. The pulse is increased in frequency, and assumes the jerking hemorrhagic character; the patient is watchful and restless; complains of sinking, and does not experience that relief from the termination of her sufferings that is usual after delivery. All these symptoms may precede any hemorrhage, and should be most carefully watched: they are the monitors of what is approaching. Hemorrhage generally begins with a slight draining from the vulva, just sufficient to soil the napkins that are applied, but in a short time, if no means for prevention are used, the stream rapidly increases to a torrent, deluging the bed, and forming a pool on the floor beneath. If the attendant is not on his guard, this may be the first notice of danger, because the patient is sometimes too much exhausted to give any intimation of her condition: she lies on her side in a listless, dosy state: syncope may follow, and hemorrhage for a moment cease, but it soon returns with the pulse, a violent gush of blood places the patient at once "in extremis:" a more prolonged syncope returns, from which she may never recover. Sometimes a fit of convulsions precedes dissolution. In this description we have assumed that there was either none, or at least a very inefficient assistance, because I knew of no case in which well-directed treatment is more effectual in arresting fatal consequences; by coolness and decision you may save your patient absolutely from the jaws of death: but if placed on your guard by premonitory symptoms, you ought

generally to avert such extreme symptoms presenting themselves. I say generally, because there are some melancholy exceptions in which a feeble constitution is irrecoverably sunk by the first discharge.

The treatment of such cases must be direct, 1st. To restore the tonic contractile power of the uterus. 2nd. To remove the placenta. 3d. To prevent, as far as possible, any subsequent relaxation of the uterus.

In order to accomplish the first object, you must endeavour, by every means in your power, to support the general circulation, which every symptom points out to you is struggling to maintain itself. Without attention to this, merely local treatment would be utterly inefficient, and might possibly increase the danger. If there be great exhaustion, the patient should be given a drachm of tinct. of opium in brandy: this may be repeated in more moderate doses, until the pulse becomes steady. If the stomach be very irritable, and reject this, it will sometimes bear broth when taken cold, and morphia may be substituted for tincture of opium. Smellie used to give portable soups, dissolved in water. The patient should be kept in a perfectly horizontal position, which is not very easy when exhaustion is commencing. The arms and legs should be wrapped in hot flannels, the curtains drawn back, the window raised, and a free circulation of air secured in the apartment. Locally, every means must be employed to retard the force of the circulation in the uterus. The most convenient mode, I think, is to have a bucket containing flannels, over which may be thrown lumps of ice, and a sufficient quantity of water poured over the whole. These flannels may be wrung out, and applied from time to time to the hips and vulva. At the same time that these means are being carried into effect, the strongest pressure should be maintained on the fundus uteri, to prevent its relaxation. The success of your treatment becomes evident when you feel the fundus first become distinct, and then more firm, under the hand. In many cases the pressure is sufficient to cause the expulsion of the afterbirth, but if not, it becomes your duty, in this favorable opportunity,—

2dly. *To remove the placenta.*—For this purpose, let one hand still compress the fundus, or assign this duty to an assistant, clearly explaining what is to be done, and then pass the hand into the vagina to the os uteri: sometimes by drawing down the hand again slowly, the back of it being pressed strongly against the posterior wall of the vagina and the perineum, the uterus is excited to contract and expel the placenta into the vagina, from whence it may be removed.

If not, draw down the funis to its full extent, as far as it will go, and let the hand in the vagina, guided by it, press forward into the uterus. The fingers formed into a cone will readily dilate the os uteri sufficiently to admit the hand; and here, again, it sometimes happens that the act of dilatation will excite a sufficient contraction to expel the placenta; if not, you must proceed; but, as a precaution, it would be well to give the patient a full dose of opium previous to entering the cavity of the uterus; when the placenta is reached, do not at once seize it in order to draw it down, rather seek to pass the hand above it, towards the surface of the cavity of the uterus. This portion of the uterus is now placed between the introduced hand and that which compresses it externally through the abdomen; by increasing this pressure, the irritation very seldom fails in causing the uterus to contract; the moment this is observed, let the hand be slowly withdrawn, having the whole placenta within it, and let a strong pressure be made on the fundus uteri externally. Thus, the placenta may be safely withdrawn, and if the uterus be properly secured, no further hemorrhage will take place. Our next object is, therefore, to do this, and

3rdly. *To prevent, as far as possible, any subsequent relaxation.*—When contraction of the uterus takes place, and it is made thus to expel the hand and the placenta, from that moment the compressing force cannot be taken off from the fundus, because there is a constant tendency in the uterus to relax again, and if so, hemorrhage is renewed: to prevent this, it is often

necessary to press very firmly with both hands on the fundus, and to continue this pressure for some time: if fatigued, an assistant may continue it; but you must be particularly careful that he understands your object, because I have seen more than one instance where pressure was made everywhere but where it should be: but when the uterus is properly compressed it becomes an extremely efficient mode of preventing its relaxation. In order to insure this effect, by the continuance of the pressure, the abdomen must be very carefully bandaged.

[After speaking of flooding occurring from irregular contraction of the uterus and morbid adhesion of the placenta, Dr. Murphy makes the following observations on the other variety of post-partum hemorrhage. He says:]

Hemorrhage after the separation of the placenta may depend upon inertia of the uterus, an over-excited circulation in a plethoric patient, or upon mismanagement. The last is by far the most frequent cause: the patient may be too soon disturbed after her delivery, for the purpose of changing the dress or bed-clothes, or her friends may keep her in a constant state of excitement by their kind but too officious congratulations. The result is flooding. Again, if she escape these dangers immediately after delivery, your patient may be allowed perhaps on the third or fourth day to get out of bed: the circulation is again excited in the uterus, still very large and easily distended, and hemorrhage is the consequence. You are not even safe on the tenth or fourteenth days. One of the most alarming hemorrhages I ever had to treat occurred on the tenth day after delivery.

Medical Gazette, Jan. 12, 1849, *p.* 48.

162.—ON HEMORRHAGE FROM THE UMBILICUS AFTER THE SEPARATION OF THE FUNIS.—By Ed. Ray, Esq.

[Mr. Ray relates a case of this kind; a lady had six children, three males and three females; the males all died from umbilical hemorrhage after the separation of the funis; the females had no hemorrhage. With regard to the sixth child, a male, on the third day from birth it became jaundiced, and hyd. c. creta with rhubarb, &c., was given.]

On the 6th day the cord separated from the umbilicus; there was nothing to remark beyond the jaundiced and somewhat inactive state of the child. From this time I undertook the dressing of the navel, and applied night and morning zinc ointment dusted freely over with powdered matico leaves. Suspecting the mother was not a good nurse, a wet nurse was with some difficulty procured. A small granular point alone remained unhealed *within* the umbilical pit on the 9th day. On the morning of the 10th day a slight stain of blood was seen on the dressing being removed from the umbilicus; the under surfaces of the matico leaves were now applied over the umbilicus, and a compress over them. At 3 P.M. I was sent for, the child being faint, and found on removing the bandage from the abdomen, that the compress was sodden with blood; firm conical compresses of lint were made so as to fit *into* the umbilical depression, and firmly retained after being moistened, with Ruspini's styptic, but did not appear much to control the hemorrhage; one wetted with oil of turpentine was then similarly applied, and to all appearance checked it, but in less than two hours it recurred, and it was evident to Mr. Peppercorn (who was present) and myself, that pressure, with or without styptics, could not be depended upon for controlling it; on watching the blood it was seen to ooze in a fine undulatory stream from left to right, and in a direction upwards, showing that it proceeded clearly from the left umbilical artery; it was of a very light vermilion colour; coagula were scarcely traceable on the linen, &c., which had more the appearance of being stained by a thin-coloured fluid, than the usual stiffened stain of blood. We decided upon encircling the umbilicus with a double ligature introduced by

a curved needle, but were shortly after compelled to surround it with a single ligature, as the blood began to ooze after a few minutes from the needle's punctures: this effectually controlled it, but the child was already blanched and losing temperature; it was now kept warn and quiet, and frequently supplied with small quantities of breast milk with a spoon, as it had not the power to suckle. On the 11th day it was still weaker; no return of hemorrhage; could not suckle; nutriment could be got down only in very small quantities; two small petechial spots on the left arm; skin yellow and cold; child quiet, and breathing almost imperceptible; motions of pasty consistence and almost white; ordered beef-tea and milk to be administered if possible, beef-tea enemata, and small doses of sesquicarbonate of ammonia sheathed in mucilage every hour. The child continued gradually to sink, and died on the 12th of May, the 12th day after its birth, 6th after separation of the funis, and in about 46 hours after the commencement of the bleeding.

[After death, it was found that the umbilical bloodvessels were not occluded, neither were the ductus arteriosus nor the ductus venosus. Mr. Ray observes:]

As to the mode in which the fœtal vessels become obliterated, I am at present disposed to believe that it is by the gradual contraction of their coats, and not by the formation of a clot within them. In the few children I have had the opportunity of examining under the age of one month or six weeks, I have not detected any trace of a fibrinous plug, but have generally been able to trace a canal in the vessels. I find upon inquiry, that it is not uncommon for a *little oozing* of blood to occur after the immediate separation of the funis, which either spontaneously or readily subsides with compression; and it is not a little singular that I have seen this *slight oozing* in two *male* infants of an ill-fed poor woman, who nearly lost a former *male* child from hemorrhage from the funis, occurring some hours after birth. Hemorrhage from the umbilicus I believe to be prevented by the contraction and the retraction of the vessels (after the separation of the funis), and by the subsequent sealing by granulation and cicatrization. The formation of the umbilical depression is probably aided by this retraction, and some degree of internal traction on the remains of the umbilical vein and urachus being produced by the respiratory movements and distension of the bladder.

[After referring to a number of published cases and some unpublished ones, which seem to show that umbilical hemorrhage is almost, if not altogether, confined to male children, Mr. Ray proceeds to suggest treatment. After referring to the importance of attention to the health of the mother, he says:]

After the separation of the funis, I would suggest the application of collodion before applying the usual compress of soft linen, and urge the daily superintendence of the accoucheur: I allude, of course, only to those cases where the disposition to this form of hemorrhage is known or suspected.

Curative Treatment.—Should the hemorrhage, notwithstanding our precautions, occur, the administration of one or other of the remedies serviceable in purpura—as steel, gallic acid, &c., might, perhaps, be of some avail; but mechanical means must be adopted for *immediately* checking it; and in the employment of those means there must be *no delay*,—no loss of time by repeating an unsuccessful attempt, as every drop of blood is of vital importance to so young an infant. Should such a case occur to me again, I should first attempt to control the bleeding by pinching up the umbilicus between the finger and thumb in the same manner as I should pinch up the integument to control the bleeding of a leechbite, maintaining that pressure, if successful, and coating the umbilicus, first filled with cotton wool, over with collodion, or employ plaster of Paris, as suggested by Dr. Churchill, if at hand. But should it not be thus readily controlled, I should produce an eschar by means of a probe, director, or skewer heated to

whiteness, coating afterwards with collodion. If unsuccessful I should then proceed to tie the bleeding vessel, and adopt the mode suggested to me by Mr. Hilton, first introducing a fine probe into the bleeding vessel, to act as a guide for the incision, as well as to diminish, perhaps, the loss of blood. I do not recommend the immediate application of the ligature in these cases, from the impression that they are so allied to the cases reported as illustrative of the hemorrhagic diathesis; and, consequently, deem it possible that hemorrhage of a dangerous, if not a fatal character, might arise from the wound necessary for its application.

Medical Gazette, March 9, 1849, p. 423.

163.—ON ENCYSTED PLACENTA.—By Dr. W. Tyler Smith.

[The contraction of the os uteri which causes this kind of retention of the placenta, is of an *active* character; *sphincteric contraction*, Dr. Smith calls it. He remarks:]

In treatment, it is of considerable importance to deal promptly with these cases. The longer the os uteri remains contracted, the more difficult will its dilatation, so as to admit of the extraction of the placenta, become. If the placenta can be felt close to the os uteri, gentle but firm traction of the cord, held as near as possible to its root in the placenta, should be used, so as to convert the placental mass into a dilator. If this plan should not be successful, the os uteri must be slowly dilated by the fingers, so as to admit the hand or fingers, according as the placenta may be required to be detached from the uterus, or merely withdrawn from the cavity. The utmost gentleness consistent with the necessary force should be employed; and if necessary, any threatening of convulsion or laceration should be prepared for by bloodletting. If the patient's mind should be excitable, or the dilatation of the os uteri should be painful, an opiate is of great use; but it acts rather by soothing mental emotion and allaying pain, than by reducing the spasm of the os uteri. We can often beneficially assist the efforts of traction of the umbilical cord in dilating the os uteri, by gentle pressure exerted externally upon the abdominal surface at each recurrence of the uterine contractions; sweeping the placenta as it were into the pelvis and towards the os uteri, by the hand, while steady traction of the cord is being kept up.

The foregoing remarks apply to cases in which the placenta is either wholly adherent to the uterus, or the uterus at large is so firmly contracted upon the separated placenta as to prevent internal uterine hemorrhage. Cases, however, occur, in which spasmodic closure of the os uteri is attended with separation of the retained placenta, and inertia of the body and fundus. In such cases, dangerous internal hemorrhage is inevitable, and the removal of the contraction of the os uteri becomes quite of secondary importance to the arrest of the hemorrhage.

Our first object here must be to excite such an amount of uterine contraction as to stay the loss of blood. In all cases where the first steps taken for the dilatation of the os uteri, which of themselves tend to produce uterine contraction, are ineffectual, the uterine inertia should be treated most energetically *per se*, without any reference to the state of the os uteri.

Lancet, Nov. 25, 1848, p. 575.

164.—ON THE TREATMENT OF AFTER-PAINS.—By Dr. W. Tyler Smith.

It consists in the removal of coagula from the vagina and os uteri, the avoidance of all the extra-uterine causes of uterine contraction, and the application and administration of opiates. Gentle friction with the linimentum opii over the abdomen is often very useful; but I have found still greater

benefit from the application of this liniment to the mammæ. By a reflex action, it allays the excessive sensibility of the uterus, when thus applied. Probably, when applied to the abdominal surface, its sedative influence is also of a reflex kind. The sensorial connection between the nerves of the abdominal surface and the abdominal and pelvic organs is very striking in some diseases. For instance, in peritonitis, there is actual and intense tenderness of the skin of the abdomen in addition to the tenderness of the subjacent peritonæum. This is a slight digression; but I mention it to show the reflex sensory connection between the surface and internal organs, which, in the case of after-pains, may be made of considerable therapeutic service.

In excessive after-pains, without hemorrhage, without the presence of coagula, and in the absence of other signs and consequences of inertia, the infant should never be applied to the breast for some hours after delivery; not, in fact, until the uterus has become calmed from its state of morbid excitability. Early and constant stimulation of the breasts by the child is a common cause of irritable uterus for many days after delivery. This agent, so salutary in all cases of impending inertia, is often made, unnecessarily, a cause of miserable suffering, at a time when the patient is little able to endure it, and without any counterbalancing good, if the uterus has contracted healthily. I repeat, we want no more than safe contraction; every after-pain beyond this point is both unnecessary and mischievous. *Lancet, Nov.* 25, 1848, *p.* 576.

165.—ON INVERSION OF THE UTERUS.—By Dr. W. Tyler Smith.

[Dr. Smith thinks that this accident never arises from mechanical traction of the chord, merely. He says:]

From the best consideration I have been able to give the facts of inversion, I am persuaded that it depends in *all* cases mainly upon an *active* condition of the uterus. Where it takes place without any mechanical interference, there can be no doubt of the preternatural and perverted activity of the uterus. But I am convinced, that even in cases where the placenta is attached to the centre of the fundus, and when the chord is drawn through the vagina with any amount of force likely to be exerted by an accoucheur, it is not a mere mechanical displacement which produces the accident, but the irritation of the fundus uteri by traction, excites contraction of the fundus, thus producing that contraction and descent of the fundus uteri, which is the first stage of the accident. The common opinion has very naturally arisen from observing, in some cases, that the fundus uteri, when the placenta is firmly attached, follows the advancing chord, while traction is being used. According to my view, the depression of the fundus uteri, even in these cases, is not a simple yielding of the part, according to mechanical principles, but an active contraction, excited by the irritation of the fundus uteri by the traction of the placenta.

To pursue the steps by which complete inversion is produced. There is, first, cup-like depression of the fundus uteri; coincident with, or immediately following upon, this depression, there is hour-glass contraction of the body or lower portion of the uterus. The annular contraction of the body of the uterus grasps the introcedent fundus as it would a foreign body, and carries it downward, for expulsion through the os uteri, the os uteri being at this time either in a state of inertia, or actively dilated, the same as at the end of the second stage of labour. After the inverted uterus has passed through the dilated os uteri, this part of the organ becomes contracted, preventing reversion from taking place. Thus, there is, first, depression of the fundus uteri, with annular or hour-glass contraction of the body of the uterus, and dilatation of the os uteri. Next, there is intus-susception of the fundus by the body of the uterus. Lastly, complete inversion occurs, with contraction of the os uteri upon the inverted organ. If we wished to describe this accident in

three words, they would be,— introcession — intus-susception — inversion. The displacement may not be complete; it may in some cases stop at introcession; in others, at intus-susception, and then return to the natural state; or it may remain intus-suscepted. Inversion produces violent disturbance of the nervous system, and is frequently attended by alarming hemorrhage. But the symptoms of the intus-suscepted uterus are still more violent. The strangulation of the fundus is almost as severe a shock to the system as actual rupture. In inversion, the hemorrhage is somewhat arrested by the os uteri acting as a tourniquet to the uterus. We may compare perfect inversion of the uterus to intus-susception of the intestinal canal, only that the intus-suscepted portion of intestine is not protruded externally. Probably, many cases of prolapsus ani should be called inversion of the rectum rather than prolapsus. Inversion generally occurs quickly after the delivery of the fœtus, between the expulsion of the child and the expulsion of the placenta. I have known it to take place after the death of the mother, and after rupture of the uterus had occurred.

In the latter case, the fœtus was passed into the peritoneal cavity, while the uterus became inverted, and protruded through the vagina. The predisposing causes of the accident are the causes of acute labour and excessive or irregular action of the uterus. It is of very great importance to understand clearly the real nature of inversion, as it is one of those accidents which is most confidently referred to mal-practice. The less it is considered a mechanical displacement, the less disposition will there be to attribute it to the accoucheur; owing to the prevalence of the mechanical idea, obstetricians have sometimes been blamed most unjustly in cases of inversion.

The treatment consists of the mechanical re-position of the uterus. Immediate steps should be taken to reduce the inversion, because of the rapidly increasing contraction of the os uteri, which, by impeding the circulation, causes an increase in the size of the tumour. The size of the uterus should be reduced as far as possible by pressure, and by detaching the placenta in cases where it still adheres. By moderate but sustained force the uterus is then to be passed up through the vagina and os uteri. After the organ has been partly passed through the os uteri, the muscular action of the uterus itself assists in restoring it to the proper position. It is reinstated with a sudden jerk, causing a considerable report at the moment of its restoration. In cases where intus-susception exists, the hand must be passed through the os uteri, so as to overcome the annular contraction, and to restore the intus-suscepted portion to its proper position. Cases of intus-susception and inversion require careful watching until the uterus has permanently contracted. *Lancet, Nov. 25, 1848, p. 175.*

166.—ON THE PUERPERAL FEVER OF VIENNA.—By Dr. C. H. F. Routh.

[In a paper by Dr. Routh, communicated by Dr. Murphy to the Medical and Chirurgical Society, the author observes:]

There are three lying-in departments in the General Hospital of Vienna. To one of these strangers are not admitted. Of the two others, to which only the author's remarks refer, one is destined for the instruction of medical men and midwives, the other for the instruction of midwives only. The average number of deliveries in each department is from 250 to 300 per month. The mortality in the division for midwives and medical men has generally been thirty per month, and has occasionally been seventy. In the division for midwives only, the number of deaths has generally been from seven to nine per month. The clinical instruction is conducted on precisely the same general plan in the two departments; but the medical men receive also practical instruction in a private course, in which the operations are performed on the dead body of some female, while the midwives

receive this instruction by means of the leather phantom. The frightful mortality in the division to which medical men are admitted, became the subject of a government inquiry, and the number of students in attendance was reduced from forty to about thirty. The mortality, however, remained the same as before. On inquiry, it was found that in other countries, where there were two divisions in the lying-in hospitals, one for midwives, and another for medical men, the mortality was far greater in the latter. The author shows that this difference could not depend on the manipulations of male attendants being more rough than those of midwives, nor to the influence of contagion or affection. He adopts the explanation proposed by Dr. Semelweiss, the assistant physician of that division of the Vienna Lying-in Hospital in which the great mortality has occurred—namely, that the real cause of the mortality from puerperal fever there, was the "uncleanliness of medical men and students in attendance;" their hands being impregnated with cadaveric matter through dissecting, making autopsies, and performing obstetric operations on dead bodies. Dr. Semelweiss recommended all students attending his division of the lying-in hospital not to handle dead matter, or, if they did so, forbad them to make any examinations of the patients till the following day. And he directed every student to wash his hands in a solution of chlorine prior to and after every examination made on the living subject. The result was, that the number of deaths was reduced from thirty per month, to seven per month, the usual average mortality of the division for midwives only. The author makes some remarks on the modes in which the cadaveric matter may be introduced from the hand of the medical attendant into the system of the woman. He then describes the characters of the puerperal disease so fatal in the Vienna hospital, with the view of demonstrating its resemblance to the effects of a poisoned dissection wound; and he concludes by recapitulating the inferences which he believes to be justified by the facts stated in his paper.

[After the reading of this paper at the Royal Medical and Chirurgical Society, Dr. Murphy mentioned the case of a German student, who was constantly going to post-mortem examinations. Puerperal fever seemed to attend him wherever he went; but on his giving up his pursuit after dead bodies, the fever subsided.]

Dr. Copland said, that the facts stated in the paper were so convincing that we could scarcely doubt their accuracy. The mode of infection mentioned by the author was, however, only one of the modes in which puerperal fever was propagated. It was known that the disease might be communicated also by the hands of the accoucheur who had attended a case of the disease. The paper had proved that it might be communicated by the hands used in post-mortem examinations. But the disease frequently broke out without any chance of its origin being traced to this cause. In most cases, in the lying-in hospitals, the matrons, or mid-wives, who did not examine bodies, delivered the patients. He thought that something was due to the frequency with which examinations during labor were made, and also to the atmosphere of lying-in establishments. This was impure, from effluvia resulting from the lochial and other discharges of the women. In this way the disease was propagated by napkins, &c.

Mr. Moore could testify to the accuracy of the author's description of the cleanliness of the hospitals in Vienna. The amount of post-mortem examination going on in that establishment was remarkable. He had seen as many as fifteen bodies lying for examination in a morning. The students and professors had their hands immersed in these for hours together. The position of Vienna was such as not to surprise any one that puerperal and typhus fevers were prevalent there. It was in a flat, marshy district, and was frequently visited by storms. The mortality of puerperal fever in this city did not exceed that from typhus.

Mr. Marshall said, that bathing the hands in cholrine, after post-mortem examinations, did not always act as a preventive to puerperal fever. He

had been examining a body. He was called from thence to a labour, but took the precaution of changing all his clothes, and washing his hands in solution of chloride of lime; his patient, however, was seized with puerperal fever, and the next following three suffered from the same malady.

Lancet, Dec. 9, 1848, p. 642.

166—ON THE INTRODUCTION OF AIR INTO THE VEINS AFTER DELIVERY.—By Dr. Simpson, Edinburgh.

A series of cases that Dr. S saw in consultation, and that occurred in rapid succession, six or eight years ago, seemed to him to suggest the idea whether air might not become introduced into the venous circulation of the mother after delivery, and whether one common result of this accident was not the occurrence of a red or scarlatinoid eruption upon the cutaneous surface of the patient.

The first case occurred in the Lying-in-Hospital. The patient had been delivered of twins. Dr. Zeigler was called to visit her, in consequence of some difficulty connected with the birth of the second child. Considerable post-partum hemorrhage, with alternate contractions and relaxations of the uterus supervened, and she seemed to rally very imperfectly from the effects of the flooding. In consequence of this, Dr. S. saw her an hour or two subsequently. The pulse at that time was very rapid and weak, almost imperceptible. The countenance extremely anxious, and here and there was an evanescent red scarlatinoid rash over the body. The patient died in a few hours. The body was opened in a short time after death, because it was considered desirable not to incur the fallacy of air being present from decomposition; and Drs. Simpson and Zeigler were anxious to ascertain if the anomalous symptoms that were present during life, could possibly arise from the entrance of air into the veins. To make the examination the more certain, the abdomen was opened under water. The lower vena cava, but specially the uterine and hypogastric veins were distended with frothy blood, and the air bubbled up through the water when any of these tubes were opened. The larger veins in the extremities were in the same state.

Some search was subsequently made into the literature of cases in which air had been introduced into the veins during surgical operations upon the neck, &c., in order to ascertain if the evanescent patches of red or scarlatinoid rash remarked in the preceeding instance, had been observed in any of these surgical cases. Dr. Warren, of Boston, in an article on the subject in the American Cyclopædia of Practical Medicine, relates two cases which occurred in his own surgical practice. The first patient recovered after being insensible for a considerable time. While still comatose, "the leaden colour in the cheeks," says Dr. Warren, "assumed a *reddish* tinge, and the alarming character of the symptoms was evidently diminished." The second case was fatal. During the period elapsing between the entrance of the air, and the death of the patient, Dr. Warren, in describing the symptoms remarks, "The livid colour of the cheeks gave place to a suffusion of *vermillion red*, and no glow in the cheek of a youthful beauty ever gave one so much pleasure as that flush. But the flush soon passed off."

If the red or scarlatinoid rash which appeared in the preceeding obstetric case upon the surface of the skin, were owing to the entrance of air into the uterine veins, might the symptom be accounted for on the idea, that the introduced air directly mixed with, and oxygenated the blood in the capillary vessels?

After the preceding case occurred, Dr. Simpson was called to three or four other instances in which a similar train of symptoms was present;—namely, great depression after delivery, a rapid and almost imperceptible pulse, and patches of an erratic scarlatinoid rash upon the surface. All the patients died within two or three days after delivery. In one case which

he saw with Mr. Kerr, and where the death was much more rapid, no red rash appeared, although the other symptoms were analogous. The first was the only case in which an autopsy was procured. Two or three of the cases had been considered as malignant scarlatina, a disease which was acknowledged by all our highest obstetric authorities to be exceedingly fatal to the puerperal female, but which may possibly in many other cases have been mistaken for, and confounded with, the affection to which this notice refers.

Supposing the introduction of air into the venous system after delivery to be the cause of the symptoms or affection in question, it is not perhaps difficult to understand the mere mechanism of its introduction. Surgical pathologists generally hold, that the air cannot be *drawn* into open veins, unless these veins are not very distant from the heart.

But air may be *forced* into open veins when the open orifices are at a distance from the heart, and when circumstances exist capable of causing it to enter into such orifices.

A mechanism calculated to produce the entrance of air in this last way, exists in the uterus after delivery. The interior surface of the organ, especially opposite the late seat of the placenta, has a number of ruptured venous orifices opening upon it.

Supposing air once introduced into the uterine cavity, which in some cases may occur in consequence of the alternate relaxations and contractions of the walls of the organ following delivery (as in after-pains, post-partum hemorrhage, &c.); and supposing further, that under the returning contractions of the organ, the expulsion of this air from the cavity was prevented by the presence of a clot at the os uteri, or other such obstructing cause, it will then, under the compression to which it is subjected, be liable to be driven into the open venous orifices existing in the lining membrane of the uterus. A bottle of caoutchouc of the shape of the uterus, and with tubes like the venous tubes of the uterus opening upon its interior, would act in this way on the principle of the force-pump, in sending any air sucked or drawn up into its cavity along these open tubes, if, after being full, its parietes were compressed, and its aerial contents prevented from escaping through the mouth of the bottle, as we fancied to be the case in the uterus under the conditions mentioned.

Monthly Journal, April, 1849, p. 707.

168.—ON PUERPERAL CONVULSIONS.—By Prof. MURPHY, University College.

[Remarking on the difference in the symptoms of puerperal convulsions in different cases, Prof. Murphy says:]

Sometimes these attacks assume all the characters of epilepsy, sometimes of hysteria. Cases present themselves where symptoms of apoplexy predominate, and give that character to the fit; and again we find that these paroxysms are the final symptoms of extreme hemorrhage. A similar form of convulsions takes place when the action of the heart is at its maximum, and when it has almost ceased from loss of blood. Some writers describe puerperal convulsions as if every form were alike. Others enumerate its varieties, and speak of epiplectic, apoplectic, anæmic, and hysterical convulsions.

Sthenic convulsions occur most frequently in patients who are of a plethoric habit, in whom the circulation is unusually active, and where we have every evidence that blood is in excess. In such instances the irritation of any organ that is largely supplied by the ganglionic nerves will cause convulsions when the spinal system is predisposed to irritation, in consequence of the newly-excited function of the uterus. Thus a hearty meal, a sudden fright, a loaded state of the intestines, will cause an attack independently of labour. But when labour begins, when the action of the uterus is

powerful, if it meet with much resistance to its efforts, and its action is impeded by uterine congestion, convulsions are frequently the result.

Puerperal convulsions may seize the patient either before, in the progress of labour, or after it has concluded. Those that occur before or in the commencement of labour generally depend upon the irritation of some other organ than the uterus, and hence are much more fatal than those which are the result of labour; you have in fact two sources of irritation acting upon the spinal system in place of one. Dr. R. Lee relates the case of a lady who "returned home after midnight from a large dinner party, at which she had partaken of a variety of dishes and wines, and had been seated before a large fire." Labour came on soon after, and with it violent convulsions. Another patient "being in the eighth month of her pregnancy dined on curry and rice, and ate bacon and eggs at tea;" the following day she had convulsions and premature labour. Both these were fatal cases, and in both the stomach was a primary, the uterus a secondary source of nervous irritation. Violent mental emotions act precisely in the same manner. More commonly, however, these are not the cases that induce the paroxysm; on the contrary, labour proceeds to a certain point without interruption; the action of the uterus is perhaps powerful, the head large, and the resistance to its advance great. A severe struggle arises, congestion takes place in the uterus, the pains are interrupted, a morbid irritability is excited in the uterus, which is communicated to the spinal centre, and thence reflected over all the muscles in violent convulsions. The uterus alone is the source of irritation here, and therefore the cause of the attack is more easily removed.

Dr. Murphy sums up his remarks upon the nature and causes of puerperal convulsions, in the following remarks:]

1st. Puerperal convulsions should not be confounded with epilepsy, nor with apoplexy. They agree with the epileptic attack in their physiological, but not in their pathological characters. Apoplexy is an effect of the paroxysms, which may or may not follow from them.

2d. The predisposing causes of puerperal convulsions, are either an excess of blood (hyperæmia), a deficiency of blood (anæmia), or impure blood.

3d. The proximate causes of convulsions are chiefly eccentric causes, being the morbid irritation of the afferent nerves supplying the different vital organs.

4th. *Morbid irritation of the uterus* is the most common proximate cause of puerperal convulsions, the result either of hyperæmia or anæmia. Hence the division into sthenic or hyperæmic convulsions, and asthenic or anæmic convulsions. Under the latter head we include not merely loss of blood, but poverty of blood, and impure blood, because the effect seems to be similar, only differing in degree.

5th. *Morbid irritation of other organs* also causes puerperal convulsions, because, during pregnancy, and at the time of labour, the nervous system is more excitable than at any other time; and hence any organ may easily be rendered morbidly irritable. Puerperal convulsions so caused are much more fatal than the former, because the nervous centre is exposed to a twofold source of irritation—the organ primarily affected, and the uterus that is secondarily excited.

6th. In the whole of these phenomena we must perceive a beautiful illustration of the reflex nervous function; the peripheral nerves that supply the affected organ rapidly communicating their irritation to the spinal system, which, as an excito-motor centre, radiates the irritation over the whole of the voluntary muscles, and the muscles of respiration, in violent convulsive paroxysms. Even the involuntary muscles, as the uterus and heart, do not escape, but give every evidence of greatly increased muscular contractions.

Medical Gazette, Jan. 26, 1849, p. 133.

[The treatment of convulsions, Prof. Murphy observes, must depend upon the cause He says:]

Hyperæmic convulsions are most frequently met with. In such cases you generally have well-marked premonitory symptoms—the bounding pulse, throbbing headache, singing in the ears, &c., &c., give you sufficient notice of the excitement in the circulation, and the impending danger: if, with these symptoms, the pains are short, and the action of the uterus laboured, you may be certain of convulsions unless prompt relief be afforded. A large and decided depletion is clearly indicated: thirty or forty ounces of blood may be taken with advantage; every extraneous source of irritation should be removed: if improper food or drink be taken, or if the bowels are constipated, emetics and active cathartics are necessary. The salutary effect of depletion may be maintained by placing the patient under the influence of tartarized antimony; the force of the circulation is reduced by the nausea excited, and the labour proceeds more favorably to its conclusion. It is of great importance to notice quickly, and to avert with promptitude, these premonitory symptoms, because I am persuaded that decision at this stage of the threatened attack may prevent it altogether, while hesitation and feebleness will only more certainly determine the paroxysm.

If, however, convulsions seize the patient unexpectedly, the first object of your attention is to save her from being injured during the fit; a cork should be placed between the teeth in order to prevent the tongue being cut. In the violent succession of the fit, the patient may be jerked from the bed; she often throws herself about the bed with great violence; you must prevent her being hurt, by removing every thing out of her way, but not, recollect, by holding her down with all your strength: this is a very common mistake. I have seen the bed surrounded by friends, some holding the body, others the legs and arms. as if they could thus stop the convulsion. The only effect of their exertions is to exhaust the patient: she complains of great fatigue and soreness when she recovers herself: nothing more should be done than to prevent her falling out of the bed; the less the convulsive paroxysm is restrained the better; you may, however, diminish its severity, or possibly arrest it, by exciting a nervous shock—cold affusion is sometimes found very serviceable. Denman used to recommend that a large basin of cold water be placed within reach, and when the fit was commencing to dash it against the face with a whisk; I have adopted this practice frequently, and with complete success: the paroxysm was sometimes stopped altogether, but if it took place it was much less violent than before.

The general treatment of the case can only be undertaken when the fit is subsiding, just as the stage of coma is approaching. Depletion, to the extent we have stated, should be at once carried into effect; it would be advisable also to administer an active cathartic enema: I think a terebinthiate enema is the most efficient for this purpose. The head, and especially the back of the neck, should be covered with cloths wrung out of iced water; but, at the same time, it is very essential that the temperature of the lower extremities be maintained, the circulation being often just as feeble there as it is strong about the head and neck. If the return of the paroxysm be thus prevented, you may give the patient a full dose (gr. x.) of calomel, and in two or three hours the usual saline senna mixture, adding to it from half a grain to a grain of tartarized antimony. It will be well, also, to continue the use of tartar emetic, in half-grain doses, for some time afterwards: its influence in controlling the action of the heart is very great, and if judiciously given will generally render a second depletion unnecessary: when it is administered for this purpose, it should be combined with tincture of opium, so as to prevent any undue irritation of the intestines.

The most important question, however, that we have to consider is, the delivery of the patient: the uterus is morbidly irritable, and the child is an

irritant so long as it remains in its cavity. Should it not be at once removed? The apparent conclusiveness of this argument has, in most cases, led to immediate delivery, without much hesitation as to the operation that may be necessary for the purpose: the child is extracted either by the forceps, the crotchet, or by turning, according to circumstances. I very much doubt the propriety of this practice as a general rule. I do not mean to object to the introduction of the forceps when the head is within its reach, and there is sufficient room for the application of the instrument; neither, if the head be impacted, and the child's death ascertained, need we feel any difficulty about perforation: but to destroy a living child, or to pass the hand into the cavity of the uterus for the purpose of turning it, on the principle that it must be at once removed, appears to me very objectionable, because I think it unnecessary. In many of those cases, the child is delivered by the natural efforts, generally dead, but sometimes living. Unless, therefore, you were satisfied of its death, it would be unjustifiable to destroy it by the perforator. If proper constitutional treatment be adopted, the hazard to the patient is not increased by any delay that caution may require; while, on the other hand, by precipitate interference positive danger may be incurred. This seems to me to be especially the case when the child is turned, because the irritation from the presence of the child in the uterus is as nothing when compared with that caused by the hand forced into the cavity of the womb for this purpose: a mere vaginal examination often induces a paroxysm of convulsions: you can therefore appreciate the danger of the more violent operation of turning the child under such circumstances. You will find, in the history of such cases, that the fits continued afterwards, and a fatal result was too often the consequence. Statistical results afford a very strong confirmation of this objection.

So far, therefore, as the delivery of a patient in hyperæmic convulsions is concerned, I should recommend you to trust to the action of the uterus (which is always increased) to effect delivery, at the same time controlling, by general treatment, the severity of the paroxysms. If the head descend within reach of the forceps, you may apply them if the paroxysms are continuing, but if they have subsided it is better not to do so, lest you might renew them. If the head be impacted, or if it be difficult to apply the forceps, and the child's death be ascertained (and this usually soon takes place), you may remove it by the crotchet, but I would caution you strongly against turning the child. In certain cases, as preternatural presentations, turning is unavoidable, but this rarely occurs. The more usual practice is to turn the child in vertex presentations, under the erroneous impression that, if the child be not at once removed, the danger will be greatly increased: believe me, there is much more danger in the operation itself.

In this summary of treatment we have confined your attention to one form of the attack, where there was an excess of blood in the uterus, the labour perhaps severe, the uterus rendered morbidly irritable, and convulsions the result. We shall now examine another variety, which may well be contrasted with that we have been considering.

Asthenic or anæmic convulsions will occasionally fall under your notice. Anæmic convulsions from loss of blood are the final and the fatal symptoms of extreme hemorrhage: with this we have nothing to do: but asthenic convulsions from a deficiency, not only in the quantity but in the quality of the blood sometimes take place, and when they present themselves they are always extremely dangerous. A very slight loss of blood occurring in a constitution previously debilitated by poverty and privations, will induce the paroxysms, and sometimes they occur without any loss of blood.

[After adducing cases in support of this statement, Dr. Murphy says:]

I think it may be stated as a rule, that convulsions occurring during pregnancy, or before parturition, are more dangerous than those which accom-

pany or follow labour. The former depend upon extraneous causes; the latter upon the uterus: the one may arise with women who have had many children; the other occurs almost invariably with the first child. In the latter, hyperæmia is the most prominent constitutional feature; in the former, there is every evidence that the constitution is suffering from debilitating causes.

We have wished to contrast these two forms of convulsions, because they are as equally opposed in their treatment as in their characters. Depletion, tartar emetic, purgatives, and a general antiphlogistic treatment, are required in the convulsions of primiparæ. Stimulants, opium, good diet, warm purgatives, and counter-irritation, are more suitable for the convulsions of a broken-down constitution. *Opium*, as a remedy in convulsions, has met with good and ill success: it has been highly praised, and as strongly condemned. This apparent opposition in the experience of its effects may, I think, be reconciled. Opium may be given very improperly when it is attempted to control, by its influence, the paroxysms of hyperæmic convulsions. So long as the exciting cause of the fit is in active operation, a kind of struggle goes on between the excitant and the remedy, that generally ends in a great increase of severity in the convulsions; but when opium is given in the convulsions of debility, it acts as a stimulant to an exhausted nervous system, and arrests the fits. It is right to state that in such constitutions opium has sometimes been taken as an habitual stimulant.

Stimulants, such as camphor, ammonia, wine, brandy, &c, are useful on the same principle as opium: they restore the activity of the circulation, and with it a certain amount of nervous energy. When inanition is the most obvious cause of the debility, and of the convulsions consequent upon it, a nutritious diet cautiously administered, is of more efficacy than medicines. The only remedies of the antiphlogistic class required in such cases, are *purgatives*. The bowels are usually constipated, and it is possible this irritation may have been the immediate cause of the attack. It is always advisable, therefore, to procure a free evacuation from them before opium is administered. When these are necessary, the warm stimulant cathartics are the best, such as aloes, assafœtida, turpentine, &c.

Immediate delivery of the patient is not, I think, required, and may be more dangerous here than in sthenic convulsions. In both cases the operation renews the paroxysms, which continue long after delivery; but in the asthenic form this alone may determine its fatal termination: while in sthenic convulsions there is still hope that the constitution will maintain itself until they gradually subside. Besides this, in the former variety, there is less difficulty than in the latter in the expulsion of the child; consequently there is less reason for a precipitate interference.

[Depletion is contra-indicated: nevertheless, it is necessary to relieve the venous congestion which results from the convulsions. Dr. Murphy remarks, that if this cannot be effected by dashing cold water on the face, we may cup at the back of the neck, and afterward apply a blister or a sinapism; taking care, at the same time, to support the patient's strength, and to keep the surface warm. Dr. Murphy remarks:]

Morbid irritation of any other of the organic viscera may cause puerperal convulsions, which are generally much more fatal than hyperæmic convulsions, because, in such instances, there are two centres of irritation in place of one: the organ that is directly affected, and the uterus that is indirectly excited—the primary and secondary centres of excitation. Thus we find the paroxysms may seize the patient during pregnancy, and induce premature labour; or they may occur just before labour, and hurry it forward. In both cases the action of the uterus is the consequence, not the cause of the attack. In this view, gestation and labour act only as predisposing, not exciting causes. A patient who at any other time might escape the conse-

quence of excess in eating and drinking, may be seized with convulsions when labour is approaching. A supper of oysters, that at a more favourable moment would only cause a sounder sleep, if labour be near, may induce convulsions that rapidly hasten to a fatal termination. A sudden fright, which would only cause syncope if pregnancy did not exist, excites paroxysms that cannot be controlled. In this manner, irritation of the brain, stomach, or intestines, when it excites a corresponding irritation of the uterus, gives rise to the most dangerous form of convulsions that we meet with.

The *treatment* of such cases must be directed to relieve the organ that is the primary centre of irritation. If it be the stomach, emetics which are prompt in their action, as mustard, sulphate of zinc, &c., are the most efficient. When the stomach is relieved, anodynes may be given with advantage. If the intestines are loaded, active purgatives, both by the mouth and rectum, are necessary. If the brain be excited in a plethoric patient, cupping the back of the neck, counter-irritation, cold to the head, calomel in full doses, purgatives, and tartarized antimony, may all be required; but if she be of a feeble constitution, camphor, ammonia, and opium, are more serviceable. The treatment of these latter causes may be conducted on the same principle as similar forms of puerperal insanity.

[Dr. Murphy then proceeds to speak of hysterical convulsions. They resemble the ordinary hysterical fits, and except when they are the result of great mental shock, they are not dangerous. The treatment will consist in dashing cold water on the face to arrest the paroxysms, and in giving a turpentine or assafœtida enema, which will generally bring away a large quantity of scybalous and offensive fæces. When the bowels are fully relieved, we may give diffusible stimulants, as ether, ammonia, or camphor, combined with opium. Depletion and antiphlogistics are not admissible. In patients liable to such attacks, the state of the bowels must be carefully attended to for some time before the approach of labor.]

Medical Gazette, Feb. 9, 1849, p. 231.

169.—ON DR. SIMPSON'S UTERINE SUPPORTER.

Dr. Ashwell says:—Two cases have recently come under my care, and I have heard of more, where the results arising from the use of this instrument have been very serious. Looking at it pathologically, I can scarcely imagine anything better devised for inducing disease. According to this practice, a piece of ivory, two inches and a half long, is to be introduced into the uterine cavity, and its bearing must of necessity be on some part of the lining membrane, a surface ill adapted to support the pressure for two or three months together of such an instrument. The consequences may be supposed. One of the patients from whom, after a long and distressing journey, I removed this ivory one-pronged fork, told me she had never been free from pain since its introduction. In addition, it had produced frequent and intense sexual excitement, preventing sleep for many nights together, and had kept up constant leucorrhœal discharge. In the other example, during the two months this instrument had been in use, the sufferer, in addition to the previous complaints, had never been free from sanguineous discharge, lumbar pain, and frequent desire to micturate. In both, the speculum showed that abrasion of the os and the ostium vaginæ had resulted from the use of the so-called uterine supporter.

[The reviewer of Dr. Ashwell's work also expresses an unfavorable opinion respecting the plan of introducing a stem into the uterus. Speaking of this, and other fashionable practices, he says:]

Is there anything so serious in a retroversion of retroflexion or the unimpregnated uterus, as to justify a practitioner in running the risk of exciting peritonitis, cellular inflammation, and abscess,—injuring the structure of

the womb,—and enkindling desires, or implanting habits, which destroy parity of feeling and physical health? Our own conviction is, that this supporter will be found to create more disease than it cures: and with the belief that the uterine sound will be extensively, because easily employed, the same observation will, we think, be verified in it. The habitual use of powerful escharotics is simple inflammatory hypertrophy of the cervix, cicatrizing and contracting the os and cervix, and frequently too the vagina, and risking deeper-seated pelvic inflammation, is open to a similar inquiry, and the same animadversion. May we not add, too, the practice, now becoming common, of opening and dilating the os uteri, whenever it happens to feel rather small, and smearing the uterine cavity with the solid nitrate of silver, to excite the menstrual flux; and, at last, to cover the spirit of obstetric adventure with the mantle of Quixotism, the announcement that the Fallopian tubes are to be explored to remove sterility? Surely, in all these, there is much that is visionary; more that is meddling; and in all there is the tendency to create more disease than they cure. It appears to us that much of what has been proposed and adopted in the treatment of uterine disease within the last six years, has been empirical, and rashly experimental; and that the evil results have been in a great measure concealed.—*Brit. and For. Med. Chir. Rev., Jan.*, 1849, *p.* 161.

170.—ON THE USE OF PESSARIES IN PROLAPSUS UTERI.—By Dr. Meigs, Professor of Midwifery at Philadelphia.

As to my own preferences in the matter of pessaries, I have only to say that whatever may keep the womb at its due height without irritating it, or incommoding the other organs and textures implicated in the descent, is a good pessary; but I deem the globe the most perfect and most suitable for the ordinary simple cases. An instrument of two inches, pressed upwards to the uterine extremity of the vagina, lifts the womb high enough; higher, in fact, than the position occupied by it in eight out of ten of those women who have had a child, and that is high enough. It is kept up by the double and consentaneous actions of the sphincter vaginæ muscle, and the levator ani. It has no angles, no sides; it cannot be displaced, save by being ejected. Its pressure is uniform over its whole superficies, save where its lower segment looks down the tube of the vagina. This cannot be so truly said of any other instrument, if we except, perhaps, the gum-elastic bottle, used and recommended by Dr. Hervez de Chegoin, in his paper in the "Mem. de l'Acad. de Med." The globe has a perfect polish, and an unoxydizable surface. It may be worn a year or more without displacement, if required; and it has no aperture to admit of the collection of putrescible materials within it. It does not prevent the escape of the mucus of the uterus and vagina, nor of the menstrua; and, in short, is the least uncomfortable and most perfect of instruments. It is a true suspensory, as needful for the descended womb as the suspensor scroti for a hernia humoralis or orchitis. It is as neat and perfect in its kind, as Petit's tourniquet in its kind, and as indispensable for the cure. Dr. Paysick used to tell us in his Lectures, that a man might as well attempt to improve the Bible as Petit's tourniquet, and I, after him, repeat, that you might as well attempt to improve Petit's tourniquet, as Physick's globe pessary. But you know I always have warned you to be *nullius addictus in verba jurare magistri*, and so I say, judge of it for yourselves.

[Dr. Ashwell also, in the last edition of his work on the diseases of females, exhibits a strong predilection for the use of the pessary.]

Ibid, p. 156.

171.—THLASPI BURSA PASTORIS IN MENORRHAGIA.

In a case of menorrhagia which had resisted ergot, astringent injections, &c., M. Vanove employed a decoction of this common herb with complete success. The woman was exhausted to the utmost degree when this medicine was commenced. The formula used was a decoction of a handful of the fresh plant in three tea-cups of water, boiled to two; the dose was a cupful twice a-day. It appears that the herb is in common use among the German peasantry.—*Rev. Med. Chir.* Dec. 1848.

Prov. Med. and Sur. Jour., March 21, 1849, *p.* 163.

172.—TREATMENT OF UTERINE CATARRH.—By Professor E. Strohl, Strasbourg.

M. Strohl recommends against this malady uterine injections, which were some years since brought into notice by Dr. Robert and Vidal de Cassis, but almost entirely abandoned since that period, from the fear of occasioning peritonitis, by the passage of the injection into the abdomen through the fallopian tubes. In order to obviate this danger, M. Strohl recommends the injection to be used very slowly, and through a long caoutchouc catheter introduced about three lines into the os uteri. This instrument should not fill up completely the orifice of the womb, in order that the injected fluid may be permitted to return immediately; thus exercising no pressure against the apertures of the fallopian ducts. The liquid recommended by the author is the liq. plumbi acetatis, or a solution of 3 i. of iodide of iron in ʒ xij. of distilled water. The injection is not painful, and rapidly modifies the nature of the uterine discharge. In twenty-nine cases, M. Strohl states that the average duration of the treatment was fourteen days. In three instances only, some unimportant hysterical symptoms were observed.—*Revue. Méd. Chir.* *Medical Times, Dec.* 16, 1848. *p.* 162.

173.—A NEW METHOD OF APPLYING VIENNA PASTE TO THE OS UTERI.—By Dr. Mitchell.

[At a meeting of the Surgical Society of Ireland,]

Dr. Mitchell drew the attention of the meeting to a new method of applying the Vienna paste to the os uteri. Subsequent to the healing of ulcers of the neck, or orifice of the womb, every practitioner may have remarked, that certain obstinate symptoms, consisting of debility, pain and weakness in the loins, a sensation of bearing down, &c., are apt to continue. These have been ascribed to very different causes. Some have attributed them to relaxation of the uterine ligaments, others to a flaccid condition of the vagina, and a third party to congestion of the mucous membrane covering the os uteri. With the latter class of pathologists Dr. Mitchell agreed, and exhibited drawings of the congested parts in support of this opinion. The treatment founded on this doctrine is that of leeching the neck of the uterus; but, in addition, some more powerful means of changing its morbid action has been found necessary. For this purpose, Jobert recommends the actual cautery; but although this procedure does not cause pain, it is so frightful to the patient that it ought, if possible, to be avoided. Gendrin prefers the Vienna paste, a mixture of caustic potash, and lime, reduced to powder, and kept in close bottles until about to be employed; and Bennet, of London, joins in this recommendation. Gendrin's plan of applying the Vienna paste is, to mix it with a little water, and then smear on a bit of adhesive plaster; and the os uteri being exposed by a speculum, to introduce the adhesive plaster, and paste it on to the neck of the uterus by filling up the speculum with cotton. The speculum is then withdrawn, when, of course, the vagina is left filled with raw cotton.

Dr. Mitchell's plan is to employ a glass rod, spread at the end into a circular disc. Upon this he spreads the paste, and, introducing it through the speculum, gently presses it against the part of the os he has selected. If he wishes to withdraw the speculum, he passes a glass tube, rounded at the end, so as to surround the rod, and then withdraws the speculum. Dr. M. claimed no credit for the mode of practice, but merely for what he conceived to be an improvement in its application.

Medical Times, Dec. 30, 1848, *p.* 198.

174.—CASE OF ENCYSTED TUMOUR OF THE LABIUM.—By Dr. R. L. MACDONNELL.

[Dr. Macdonnell was consulted by a lady on account of a tumor in the labium, of three years' duration, which presented some of the characters of hernia. It differed, however, from that disease in so many respects as to justify, in Dr. Macdonnell's opinion, exploration. The following is the account he gives of the treatment.]

March 20th. An exploratory puncture, was made, and water of a dark olive color, devoid of odor, escaped. The opening was enlarged, and a tumbler-full of thick fluid flowed out, which was of a creamy consistence, and on microscopic examination was found to be composed of decomposed pus globules, with a large quantity of what appeared to be epithelial scales intermixed. The sac of the tumor was freely cauterized with nitrate of silver conveyed on a probe, and the orifice kept open by means of a plug of lint.

27th. The sac of the tumor has been filled up with solid secretion, and has undergone great diminution in size; no general disturbance.

April 1st. Scarcely any trace of the tumor to be detected, except some thickening of the labium, giving to it a greater fulness and prominence than the other. Ordered to apply mercurial ointment.

10th. Perfectly recovered; no traces of the disease left.

Four plans of treatment have been recommended for the cure of these tumors:—1st. Complete dissection out of the whole cyst—a plan which must be extremely difficult in most cases, in all extremely painful, and in such a case as mine, quite impracticable. 2d. Laying open the cyst, and filling it with charpie. 3d. Seton. 4th. Removal of the fluid, and then compression, so as to bring the walls of the cyst into close apposition. The plan of treatment which I have employed for some years past has been to cauterize with nitrate of silver the lining membrane of the cyst, so as to cause adhesive inflammation, and this process I have found to be so readily excited by the caustic, that I have never been obliged to repeat it a second time. In some instances I have touched the granulations occasionally during the progress of cure, for the purpose of hastening the filling up of the sac; and these were instances where I believed that the nitrate of silver had acted, not by inducing adhesive inflammation, but by effecting a change in the functions of the membrane, in consequence of which it threw out granulations instead of secreting, as formerly, a peculiar fluid. In every case in which I have used the nitrate of silver in this manner, a speedy cure has followed, unattended by any bad consequences, and the patient has not been aware, in the majority of instances, that anything beyond the mere puncture of the cyst has been attempted. When we reflect for a moment upon the difficulty of dissecting out a cyst even of moderate size, and upon the excessive pain the patient must endure, both in this operation and the second and third I have mentioned, and when we recollect the extreme difficulty, if not impossibility, of applying accurate pressure, it will be allowed that the method I propose is at least unattended with any of those inconveniences; and if it should prove in the hands of others as successful as it has done in mine, and I have little doubt but it will, it may be considered a plan of treatment preferable to any recommended for the cure of this disease.

The method of preparing the caustic may not be known to some of my readers, and I shall therefore make no apology for describing it:—A large-sized probe should be dipped in caustic, which has been rendered fluid by melting in a watch-glass over a spirit-lamp or wax candle, until there is a complete coating of the caustic on the probe. When this cools, we have the nitrate of silver in a form well suited for being conveyed through a small opening and into a deep cavity, and by bending the probe we suit it to the shape of the cyst, and thus it can be brought into contact with all parts. In large cysts, such as that under consideration, I have had two or three probes thus prepared, as the quantity of caustic coating one is not enough for the extent of surface to which it must be applied.

This method of destroying cysts I have been in the habit of employing in other diseases, as in encysted tumors of the eyelids, and in sebaceous encysted tumors; and lately I succeeded in curing a lady of a tumor of the shape and about twice the size of an almond, which had been growing for some months on the left jaw, and which had resisted every plan of treatment proposed by her former attendant, who had at last recommended its extirpation. A small puncture was made into it, and its contents, which were composed of a reddish jelly-like substance, were squeezed out. A probe, coated with caustic, was introduced and freely applied to its interior. For the next few days a small quantity of bloody serum oozed out, but the tumor gradually diminished in size, and now no trace of it remains, nor is there the least scar visible, which I need not say is a matter of some importance. *Dublin Medical Press, May 2, 1849, p. 273.*

175.—A NEW INSTRUMENT FOR VAGINAL INJECTIONS.

[This instrument is the invention of Dr. W. Jones, who calls it the "Syphon Douche."]

It consists of nine feet of gutta percha tubing, about one-fifth of an inch in diameter, divided into two parts, the one seven and the other two feet in length, capable of being secured by a union joint, and, if necessary commanded by a stop-cock.

The upper end of the tube is immersed in a vessel containing water, either medicated or not, at a moderate temperature, and this bends over, so that by suction from the mouth it may be may be made to discharge the contents of the vessel on the principle of the syphon. The lower portion of the tube ends in a perforated boxwood bulb, for introduction into the vagina. The female, by connecting the two portions of tube at their union-joint, thus applies a current of water, under columnar pressure, to the vaginal passage, which may be, in this way, effectually, and for any length of time, washed out. *Medical Gazette, Feb. 16, 1849, p. 295.*

176.—TREATMENT OF SORE NIPPLES BY COLLODION.

The following observations are quoted from Professor Simpson's paper on gun-cotton solution:—It has been proposed to use the ethereal solution of gun-cotton for other purposes than the dressing and union of wounds—for example, as a substitute for the starch bandage in fractures; as an application and dressing to ulcers, &c. In abrasions, and slight injuries of the skin about the fingers, it forms an excellent and adhesive dressing. There is one extremely painful and unmanagable form of ulcer in which I applied it eight or ten days ago, at the maternity Hospital, with perfect success. I allude to fissures at the base of the nipple. Many practitioners know well the agony that some mothers undergo in consequence of this apparently slight disease; the ulcer or fissure being renewed and torn open with each application of the child. In two such cases I united the edges of the fissures, and covered them over with the solution of gun-cot-

ton, making the layer pretty strong. It acted successfully by maintaining the edges so firmly together that they were not again re-opened by the infant: the gun-cotton dressing was not, like other dressings, affected by the moisture of the child's mouth; and as a dressing, and at the same time, by securing rest to the part, it allowed complete adhesion and cicatrization speedily to take place. I have applied it also repeatedly to ulcers of the cervix uteri and over various cutaneous eruptions. Its application relieves at once the smarting of slight burns. *British Record, Dec.* 15, 1848, *p.* 144.

17.—ON CEREBRAL DISTURBANCE RESULTING FROM UTERINE DISORDERS.—By Dr. G. Corfe, Middlesex, Hospital.

[Under this title, Dr. Corfe describes a train of symptoms which frequently occur in females at the climacteric period; attacking most frequently the unmarried, or those who have had no children, but not confined to these. He says:]

The symptoms, as far as I have hitherto observed, are ushered in with occasional flushings of the face, succeeded by more or less perspiration, a sense of faintness, and subsequent depression of spirits; sudden pain then ensues, either occipital, frontal, or in the course of the longitudinal sinus, where, as with some women, the hair is parted; the sensibility of the scalp is increased, and the pain is oftentimes momentary in its onset, and partial in its seat. As the disorder advances there is more or less noise in the head, described as humming, buzzing, singing, or rumbling; then comes on deafness of one ear, muscæ volitantes, palpitations, irregular action of the heart, an oppressed pulse, a weight over the forehead, or at the back of the neck: a frequent sense of formication over the face and chest, especially whilst the person is warm in bed, and about to lose herself in sleep, cramps in the legs, transient numbness in one arm, usually the left, and pain passing down the hand, and into one finger. Extreme mental and bodily depression, a peculiar feeling of dread hangs over the mind whilst the attack is hovering about them, and the least excitement, as the slamming of a door, or the double knock of a postman, will throw them into a most distressing fit of nervous suffering. The disorder is attended oftentimes with a species of fit, not unlike that of epilepsy, and anæsthesia or paralysis, or both, of one arm and leg may occur and remain for several days.

One lady with whom I am acquainted has been seized, in addition to the above symptoms, with sudden pain in the lumbar region whilst walking the streets; and on two occasions has fallen down screaming piercingly with the attack; on another occasion it was brought on by being hurried into the carriage of a train which was in motion, and the alarm which she caused to the rest of the company was of no ordinary character. She is the mother of a large family, and is capable of undergoing great mental exertion when free from these symptoms.

The period of time at which the attack comes on, or is aggravated, is also worthy of remark. If the individual does not rise in the morning with these cerebral disturbances, they will come on in the after part of the day, and they are especially aggravated if a sense of hunger ensues and it is not speedily gratified. I should observe, also, that there may be flatulence, some constipation of the bowels, and a capricious appetite. A spontaneous separation of crystals of pure lithic acid, will oftentimes remove the distress for weeks, when it recurs with equal severity.

The individuals who appear most prone to these distressing symptoms are those who inherit a gouty diathesis, who live freely on animal food, and who have been the subject of great mental exertion. The stomach is the first organ which developes the attack, although the uterus, it should be observed, is the viscus originally in fault. There has been menorrhagia, or dysmenorrhœa, with more or less debilitating leucorrhœa.

The catamenia have been "dodging" the patient for some months, and, under an apprehension that this secretion was about to terminate altogether, the patient has kept silence upon the matter, and sought for no medical advice, until the constitution has become unstrung, the fluids vitiated, the stomach deranged, the mind harassed, and oftentimes not until then, have they been compelled to seek for medical aid. The physiogomy in such instances is frequently very instructive; there is a sallow tint around the eye, a heavy expression of face, and a general sadness depicted in the countenance.

They tell you that they are often seized with partial dimness of sight, duplex vision, or that they are deprived of the power of distinguishing one-half of a person's face, just as the late Mr. Abernethy was wont to describe to his class, when speaking of injuries of fracture to the crista galli of the ethnoid bone. One gentleman, Mr. A. used to remark, "could never read my name on the door; he always saw 'Aberne,' but not 'thy;'" and a patient now before my mind can sometimes discern the chin, mouth, and nostrils of any one before him, but the upper half of the face is covered with a mist; at another time, only the longitudinal half of the face can be discerned, and this symptom will remain for two hours or more, and be succeeded by an intense headache.

I am by no means disposed to assert that similar disorders of the nervous system do not spring up in the male subject also, but I consider these as incidental to the sex, whilst they are peculiar to the female sex. The gentleman just alluded to is of a very nervous temperament, ex-sanguine, and the subject of great mental excitement from time to time. He suffers from a constant sense of acidity on the tongue, and the saliva is strongly acid to litmus paper.

Many instances of the above malady have been erroneously classed under the titles "apoplexy," "cerebral congestion," "threatenings of cerebral effusion," &c., and the lancet, with local depletion, have been unsparingly employed. Such antiphlogistic measures have invariably added to the mischief, and have increased the patient's sufferings.

The explanation of these morbid changes and symptoms appears to be this: that the catamenial secretion, from some constitutional cause, which is probably seated in the organs of assimilation, becomes altered in quality and quantity;—the elements of this fluid are thrown back on the circulation, and morbid bile on the one hand, and a lithic acid diathesis on the other, is the ordinary result. There is no organ in the female economy that so readily partakes of disturbance from uterine irregularities as the liver; and the instances are not few where protracted menorrhagia has resisted astringents, quinine, and the ordinary treatment, whilst it has yielded to brisk and frequent purgation, with small intermediate doses of calomel, &c. In such cases the uterus takes on the action of the liver, and so long as the latter viscus is allowed to remain in its torpid condition, so long also will the uterus continue to pour out an undue quantity, or an altered quality of dark venous fluid, and the patient becomes enfeebled, harassed, and distressed; hemorrhoids are not unfrequently induced also. But no sooner, oft-times, do the remedies tell upon the hepatic branches of the portal system of the liver than the intestinal portion of the same system becomes relieved from its congested state, and the uterine discharge is shortly subdued.

It is from such observations that my mind was originally led out into the study of these painful attacks of the nervous system, and I can confidently assert, that a very large number of women, who would have been treated ten years ago with frequent bloodletting, and other antiphlogistic remedies, have been perfectly convalescent from a totally opposite method. The stomach, liver, and kidneys, appear to be the principal organs which suffer from derangement, and, in order to restore to the former viscus its

healthy tone and vigour, scrupulous attention must be paid to the diet. Veal, pork, salt meats, fried and broiled fish, vegetables, except potatoes, tea, pastry, and made dishes, or ragouts, wine, bottled beer, or any liquor containing a free acid, or gaseous matter, appear to aggravate the disorder in a marked degree. Mutton roast or boiled, fish, poultry, fresh game, cocoa nuts boiled, or coffee not too strong, and draught porter, is the most agreeable diet for such a stomach; but the benefit derived from taking six or twelve fresh oysters without any other food, or additions, as pepper, vinegar, &c., or even bread, upon an empty stomach, as for luncheon, for instance, has been most remarkable in some severe cases I have witnessed. Their alkalescent character has removed the morbid acidity of the stomach, whilst it has restored its tone and vigour, and the following draught has been ordered to be taken every morning on rising.

℞. Ammoniæ hydrochloratis, grs. x.; extr. taraxaci, 3ss.; dec. aloes comp.; mist. gent. comp. aa. 3v.; sodæ pot. tartratis 3i.; tr. lavendulæ comp., ℥xx. Fiat haustus.

If this aperient should not prove of sufficient activity, it must be repeated in the middle of the day; but if, on the other hand, it is too active, the draught may be only taken every other or every third morning, yet it is of greater importance that the alimentary canal should be freely acted upon once or more daily, than that it should be allowed to continue in a torpid condition.

The alvine evacuations are usually offensive, fetid, and so dark, that I have known them to partake of the character of the motions of a patient with melæna for several days together, and I am inclined to think that it is from the fact that practitioners do so rarely submit these excretions to ocular examination, that many cases of this disorder are misunderstood, and therefore mismanaged.

Another useful remedy is to clothe the loins with the emplastrum opii, (Ph. Lond.) or else with a long strip of new flannel; and, in order to assist the liver in its healthy functions, a warm bath and occasional friction over the skin with sand soap or a horse hair glove usually promotes the healthy action of the abdominal viscera.

Whenever the urine ceases to deposit lithates, and becomes a pale canary colour; and the evacuations from the bowels present a healthy appearance, and cease to emit a penetrating fetor, there is a co-existing amelioration in the sufferings of the patient. Her spirits are more buoyant, her mind less distressed, her appetite more even, and her whole frame less weary.

Thus have I briefly sketched the outline of this disorder, which, although I am sensible is but imperfectly done; yet, if it should be the means, please God, of leading the minds of some of my professional brethren to ponder over the concurrent testimony of such a train of symptoms when they meet with them, and pause before they rashly conclude that they are wholly referrible to vascular congestion of the brain, and require active depletion, &c., for their alleviation, I shall be satisfied that my time in writing these lines has not been altogether thrown away, if the perusal of the same should be profitable to them as well as to their fellow creatures.

Medical Times, April 7, 1849, *p.* 451.

178.—ON THE TREATMENT OF ASPHYXIA NEONATORUM.—By J. O. Fletcher, Esq., Manchester.

[Referring to the plan oft reating still-born children by the use of warm and cold water alternately, Mr. Fletcher says:]

I have been in the habit for some years of treating all such cases in a very similar way, and with great success. I first immerse the child in warm water, and, upon withdrawing it, cover the chest with a cloth or

sponge well soaked in cold water (the colder the better): again immerse it in warm water, and again apply cold water, so on alternately using the hot and cold water, until there is evidence of respiratory movements. The first application of cold will generally produce a slight sob, and repeated applications will establish respiration. I conceive the good arises from the sudden impression caused by the cold on the cutaneous nerves, (which are the principal) "*excitor nerves*" in the reflex action of respiration. This is followed by response along the "*motor nerves*" of this function, as the phrenic, intercostal, &c.; hence the sob on the first application, and the establishing of respiration by being repeated. I have for an equally long period, been in the habit of ligaturing the cord before the complete birth of the child, in breech and feet presentations, sometimes even before the pulsations were obliterated, believing, as I do, that the child in these cases dies from hemorrhage into the placenta, arising from the umbilical vein being much exposed to pressure, by virtue of its superficial and unprotected position in the cord, which, together with the tenuity of its tunics, render it very liable to have its current obliterated, whereas the tunics of the umbilical arteries are firmer, and they themselves less exposed; thus they are in a measure protected from the consequences of slight pressure. Therefore, the flow of arterial blood through the vein may become obliterated, whilst the venous blood continues to flow along the arteries. from the child, into the placenta, without there being any counterbalancing stream; hence the great mortality in these cases by the usual treatment, and hence the utility of ligaturing the cord early, thereby removing one fatal consequence; and, as it is well known that a child can breath in the vagina, its chances of life are not to say the least, diminished, but, I think, much increased; for out of thirty-seven cases that I have treated in this way, *two children only have died*, which is saying very much more than I can say for the usual treatment. In this class of cases, especially, I think the good effects of alternate application of cold and warm water will be seen, if tried.

Medical Times, April 14, 1849, *p.* 479.

179.—ON CERTAIN FORMS OF STERILITY.—By G. T. Gream, Esq. Surgeon-Accoucheur to Queen Charlotte's Lying-in-Hospital.

[After referring to extreme constriction of the orificium uteri externum, as a cause of sterility, Mr. Gream proceeds to say:]

There is also a state giving rise both to sterility and dysmenorrhœa, not discoverable by ordinary examination; it depends upon a constriction of the internal extremity of the cervix uteri, while the external opening remains freely dilated. This may be detected by the introduction of a small bougie or of any instrument of that form, and it is not necessary to have recourse to inventions and probes for the uterus, of uterine sounds, or other such things, which, after their construction, are usually found to be of less use than instruments not made for the purpose.

The free dilatation of the os uteri is in such cases the object to be gained, and perhaps no treatment is attended with greater success, for in the majority of instances it is followed by impregnation. Should there be tenderness either in the uterus or its neighbouring parts, it should be relieved prevously to the attempt at dilatation; and sometimes even the abstraction of blood from the loins is necessary, or from the cervix uteri, by leeches, in order to relieve the inflammation consequent upon repeated excitement and irritation not followed by pregnancy. These symptoms are seldom present in any but women of full habit, and may generally be removed by the use of warm hip-baths, of laxatives, and a separate bed: but usually in these cases, there is not that loss of general health that supervenes upon the non-consummation of marriage as before described.

At first it is difficult to introduce a bougie of even a small size into the os

uteri, under these circumstances, but after it has once been introduced, it can readily be followed by one somewhat larger, and perhaps a third of still greater size. On the following day, or in some cases after a longer interval, a considerably larger bougie may be passed, and then a dilator may be introduced. I employed for many years an instrument made upon the same principle as the female urethra-dilator, with two blades, but without the wooden appendages that are attached to that instrument, so that when the blades are closed a simple round steel staff is formed. The point of this is inserted into the os uteri, and the dilatation effected by turning the handle until considerable resistance is offered to the further separation of the blades, or until the patient complains of sickness. I repeat this daily unless much pain follows the process, and until the os uteri remains open, and is about the size of a goose-quill.

In order to facilitate the introduction of the dilator, the patient should lie on her left side, as in labour. I have in some succeeded more readily in dilating the os uteri by applying the dilator through the speculum, and I think there are sometimes advantages in using this instrument.

[Mr. Gream does not approve of the plan of incising the cervix uteri, both on account of the alarming hemorrhages which sometimes attend the operation, and the cicatrices which are its ultimate result. He observes further:]

Sponge tents have also been introduced into the cervix uteri for the purpose of dilatation, and in some instances they might succeed; but the use of the dilator appears to me to be both safe and more certain. I have therefore preferred it to any other mode of dilatation.

The supposed cases of ante-flexion, and retro-flexion, &c., as causes of sterility, hardly require notice, so rarely do they, if ever occur; nor would the practice of introducing instruments into the uterus, and causing them to be retained there, call for any comment, if it were not right to warn those who may be inclined to try experiments, against the harm that may arise from such introduction.

Lancet, February 24, 1849, *p.* 204.

180.—ON A METHOD OF INTRODUCING BOUGIES INTO THE FALLOPIAN TUBES, FOR THE RELIEF OF STERILITY.—By Dr. W. Tyler Smith.

Believing many cases of sterility to depend upon obstruction of the Fallopian tubes, Dr. Smith was induced to seek for a method of removing such obstructions by the introduction of bougies into the tubes. There is a method of introducing a fine whalebone bougie into the cavity of the tympanum by passing it along a catheter introduced into the Eustachian tube; and it appeared to Dr. Smith that a similar operation might be applied to the Fallopian tubes. Dr. S. says:]

The following is the manner, accompanied by all the cautions I could devise, in which I determined the practicability of the Fallopian operation. I procured the uterus and appendages from a subject who had never conceived, and having first divided the uterus into two symmetrical halves, I moulded a small tube of flexible silver into such a shape, that when passed through the os uteri, it pointed accurately to the uterine mouth of the Fallopian tube on one side. It was necessary to arrange the tube so that it should pass through the os and cervix uteri in the undivided organ, and not only point towards the Fallopian angle of the uterus, but also direct a fine fibre passed into the silver tube, in the line of the Fallopian canal. The proper shape was obtained by a short abrupt curve at the extremity of the catheter. After this I ascertained, by trying the tube thus bent, upon a perfect uterus, that it could be passed with ease into the uterine cavity, directed towards the orifice of the Fallopian tube, and withdrawn again from the uterus. I next ascertained the calibre of the canal of the Fallopian

tube, by using fine wires of different sizes; and having prepared a whalebone bougie of the proper fineness, I found it could be directed with the utmost accuracy towards and into the Fallopian tube. The Fallopian angle of the uterine cavity is so acute, and the internal surface so smooth and dense in this situation, that it is almost impossible for the whalebone fibre to miss the tube. This readiness of the passage of the bougie is favoured by the anatomical shape of the uterine cavity. In the middle of the triangular cavity of the upper part of the uterus, the anterior and posterior walls project so as to touch, or nearly to touch, each other; but, from the orifice of the cervix to the Fallopian tubes on each side there are two lateral sulci, or grooves; and there is also another groove, extending at the fundus uteri from one Fallopian tube to the other. This triangular sulcus thus surrounds the promontories in the anterior and posterior uterine walls. The groove at the fundus is very useful in directing the beak of the catheter to the Fallopian orifice. Of course, it is necessary to have two silver tubes or catheters, one for the left, the other for the right Fallopian canal.

After making these preparatory observations on the uterus and Fallopian tubes, when removed from the body, it became necessary to alter the apparatus so as to suit the living subject. The only modification necessary was to adapt the tube or catheter to the large curve described by the vagina and the uterus. For this purpose I had an instrument made by Mr. Thompson, of Windmill-street, having the curve of the uterine sound to adapt it to the uterus and vagina, and an additional lateral curve at the extremity, turning towards the Fallopian tube. When completed, this instrument was not so large as the uterine sound, or the intra-uterine pessary. The whole of the uterine length of the catheter was graduated so as to measure the depth of the uterine cavity. I also had a fine whalebone bougie, very flexible at the extremity, and graduated at the handle like Gairal's bougie, in order to show the depth to which the extremity enters the Fallopian tube. The important point, it will be seen, was that of obtaining a directing-tube, accommodating itself to all the different curves of the sexual canal.

An opportunity soon presented itself, and I attempted the operation on the living subject. The patient was about twenty-five years of age, the uterus had never been impregnated, and was in the normal situation. I mention this, lest it should be supposed to have been a case of prolapsus, in which the operation of course would be more easy and simple. Having lodged the os uteri in one of Mr. Fergusson's specula, I first passed the uterine sound to the fundus uteri, so as to assure myself that no uterine impediment existed; after this, I passed in the Fallopian catheter very readily, and directed it towards the left Fallopian orifice. Steadying the catheter in this position with the left hand, I introduced the whalebone fibre through the catheter, and into the Fallopian tube, for about an inch and a half, with the greatest ease—indeed I was surprised at the ease with which it passed; but this I attributed to the great care I had taken in maturing my plan beforehand. I withdrew and re-introduced the bougie several times, without producing any pain or uneasiness whatever. In fact, the only difficulty met with was in passing the sound through the constricted portion of the cervix uteri.

In the operation upon the Fallopian tube, the patient was not at all conscious of any sensation of any kind, more than from the ordinary specular examination. I found it easier of performance upon the living than the dead subject; or rather I was able to pass a larger bougie than would have entered the Fallopian tube of the preparation. From my subsequent observations, I have no doubt whatever that the calibre of the tube is greater in the living than in the dead, owing to the contraction which occurs in the tissues of the latter. I have now performed the operation repeatedly, in the same manner, without pain or difficulty, or any subsequent inconvenience whatever, as far as the mouths of the tubes are concerned. When the tubes are not imperforate, they can, with due care, be readily operated

upon, if the sound can be passed to the fundus uteri. Of course it is necessary that the operator should be familiar with the use of the speculum, so as to command the os uteri with ease; and the uterus must not be materially displaced, otherwise the utero-vaginal curve of the instrument will not be adapted to the curve of the organs themselves. Where any difficulty is experienced, it will not be at the Fallopian tubes themselves, but before reaching these organs. This is in consequence of the very different state of the vagina and the os and cervix uteri in different women. The os u teri and the uterine cavity should be in a healthy state at the time of the operation. *Lancet, May* 19, 1849, *p.* 529.

181.—ON THE MODES OF EXPLORATION FOR OVARITIS.—By Dr. E. J. Tilt, Physician to the Farringdon General Dispensary, &c.

[Dr. Tilt ascribes the imperfection of our knowledge on the subject of ovaritis in part to the peculiarity of the modes of examination requisite to ascertain its existence. In describing these methods, he speaks, first, of *abdominal examination*. This, it is almost needless to say, must be performed with the patient lying on her back, with her head and shoulders elevated, and the thighs flexed, the bladder and intestines having been previously emptied. The medical man should warm his hands before touching the patient; and while manipulating the abdomen, should ask such questions as may engage the patient's attention, and so prevent the contraction o the abdominal muscles. As to *exploration per vaginam*, Dr. Tilt says,]

To derive the greatest amount of information from a vaginal exploration, the medical attendant should be placed on that side of the patient where ovarian tumefaction is rendered probable by pain or other signs, and he should use the index finger of the hand corresponding to that side, while he places the other hand on the hypogastric region, so as to press the ovary forcibly down towards the exploring finger. My instructor and most esteemed friend, Professor Recamier, is in the habit of passing his hand under the patient's thigh instead of above it, and finds that this mode of practice affords him greater facilities of investigation. We are thus easily able to detect the moderate-sized pelvic tumours, particularly if, as is often the case, they have gravitated towards the recto-vaginal space.

If the tumefaction is less considerable—if there be only that degree of ovarian congestion which partly produces the phenomena of painful menstruation, &c., the ovary may still be situated above the vagina, and then, in order to feel it digitally, the vaginal cul de sac, which surrounds the os uteri, must be raised. To affect this purpose, it is necessary to press the perinæum with the three bent fingers, and, when possible, to introduce both the middle and index fingers into the vagina, which gives an additional third of an inch to the exploring instrument. We are thus enabled to estimate the amount of pain caused by pressure on the swollen ovaria, as well as the degree of heat of the vagina, and whether its superier curve is elastic, or hard and resistant, as if infiltrated. Professor Simpson and Dr. Gendrin state, that in numerous cases they have felt enlarged ovaries *in situ* by bringing the organ between two fingers introduced into the vagina, while the other hand was pressed into the brim of the pelvis on the same side. The uterus, in Dr. Simpson's opinion, requires to be anteverted, and somewhat turned to the opposite side with the uterine sound, in order to stretch the broad ligament of the side under examination. He first ascertained the possibility of making this examination of the ovary in a case of natural anteversion of the uterus. When the tumour has so increased that it is no longer entirely situated in the vicinity of the vagina, but has ascended towards the brim of the pelvis, the finger, though it cannot reach its whole extent, will still afford valuable information respecting its position and state. Thus the tumour may depress the uterus to the right or to the left, may flat-

ten it against the pelvis, causing its retroversion, and thus render it impossible for the finger to attain the os uteri. M. Robert, of Paris, has met with several cases of this description. We are also able to examine the condition of the inferior segment of the uterus, and to ascertain how far its usual mobility has been encroached upon, and to what extent this organ has been bound down by the thickening and infiltration of the adjacent inflamed tissues.

By a vaginal exploration we are able to discover whether the tumour is intimately connected with the body of the uterus, or only placed in close juxtaposition to it; thus in puerperal congestion of the broad ligaments, the tumour is often so moulded as to cap the uterus. In such cases it is interesting to ascertain whether these bodies adhere intimately, for if the movements communicated to the tumour through the abdominal parietes, are felt by the finger placed in the vagina, we may suppose that the tumour and the uterus are intimately connected; we also obtain a correct notion of the diameter of the tumour, one of the extremities of which is at the hypogastrium, and the other in connexion with the vagina.

The fluctuation of an abscess of the ovaries, or of their surrounding cellular tissue, may sometimes be distinctly felt by a manual examination, particularly after parturition; but even then it is necessary to support the tumour by placing the finger in the vagina, otherwise, the semi-mobility of the whole tumour might easily be mistaken for the mobility of its contents. When thus exploring, it is sometimes possible to detect a correspondence of fluctuation between the hand on the hypogastric region, and the finger in the vagina. When the tumour is situated sufficiently low down, fluctuation may be detected by examining the patient per vaginam; two fingers (the index and the middle finger) being introduced into the vagina, and placed so as to circumscribe a segment of the tumour. One finger must be firmly applied to the tumour to receive the shock transmitted by the fluid, while percussion is made with the other finger on the opposite side of the tumour. In the meantime, an assistant, by firmly pressing in the hypogastric region, forces the fluid to accumulate as low as possible in the pelvis. The facility of thus discovering fluctuation will be in direct proportion to the thinness of the parietes of the tumour, and its prominence in the vagina. If this mode of investigation fails to render evident the existence of pus, the presence of which is otherwise indicated by rational symptoms, an exploratory puncture will decide the question without subjecting the patient to either much pain or imminent danger.

Exploration per rectum.—Notwithstanding Dr. Simpson's assertions to the contrary, I agree with Stoltz and Hertz, (both distinguished professors of the faculty of Strasburg,) with Lowenhardt, Cherau, and Dr. Ashwell, that it is possible to reach the ovaries, in their natural situation, by this mode of exploration, and thus to appreciate their volume and their degree of sensibility. Whatever difference of opinion may exist upon this point, all agree, that on account of the thickness and elasticity of this membranous canal, even slight swellings of the ovaries or the neighbouring tissues may be thus easily detected; and that when the tumour is considerable, it may be the more readily distinguished from the uterus. The advantages to be derived from rectal examination have been more clearly defined by Dr. Cherau than by any other author.

"An exploration per rectum," says this writer, "is one of our most important elements of diagnosis; for by this means we can reach the posterior aspect of the uterus, and can distinctly appreciate the ovary, even if but little swollen. When its structure is healthy, no pain is experienced on pressure of the ovary; but when it is inflamed, the patient often expresses, by her features, that we touch the seat of the disorder. While examining per rectum with the one hand, the other should be placed on the region of the ovary on the same side, the finger being in the rectum, and the physician pressing gently, but suddenly, with the other hand, on the ovarian region. The patient will then experience, in the posterior part of the pelvis, a pain

similar to that felt when the ovary was directly pressed by the finger. Pressure on the ovary also produces as much pain in the inguinal region as if that were the actual seat of the impact. If the ovary be tolerably swollen, and the abdominal parietes thin, it is possible, by pressing the ovarian region, to force the ovary against the finger; and this will frequently cause the patient to exclaim that we hold the complaint between our fingers.—*L'Union Médicale*, June 3, 1848.

It is necessary to state, that if a fluctuating tumour be situated in the immediate vicinity of the rectum, nothing will be easier than to detect fluctuation by a rectal exploration?

Double touch.—I have given the name of "double touch" to a mode of exploration, wherein the two previous modes are combined, so that the index-finger being placed in the rectum, and the thumb in the vagina, it is possible to embrace between the thumb and finger any intervening morbid growth. This mode of exploration is not, I believe mentioned by authors; or, if alluded to, its value has not been sufficientty pointed out. I have seen it sometimes employed on the Continent by several eminent men; but Professor Recamier has principally insisted on, and practically exemplified, its utility, as I shall have occasion to show, in certain interesting cases. It is particularly useful in enlightening us respecting moderate-sized tumours, which are not large enough to rise above the brim of the pelvis, and still small enough to escape identification by the finger, in the rectum or vagina alone. It enables us to seize the antero-posterior diameter of the tumour, and to recognise its position: and it prevents our mistaking the uterus for a morbid growth. If, as is often the case, the recto-vaginal space is the seat of the tumour, by thus practising the double touch, and pushing up the perinæum, by pressing on it with the first inter-digital space, we can embrace the accessible part of the tumour, and easily detect its fluctuation if fluid be present.

[Dr. Tilt adduces several cases to show the great value of this mode of examination.] (*Lancet, March* 10, 1849, *p.* 268.

182.—CASE OF OVARIAN DROPSY, SPONTANEOUSLY CURED.—By Dr. J. Hughes Bennett.

Anne Pyper, aged 25, admitted into the Royal Infirmmary, Nov. 8, 1848. She had been delivered fourteen days previously of a male child, in the Maternity Hospital; the labour presented nothing unusual. After the birth, the abdomen continued enlarged, and at first led to the suspicion that another fœtus remained in the uterus. After a time, the true nature of the case was rendered manifest, and a large swelling was detected, which was moveable to a certain extent, and presented all the characters of an encysted tumour of the left ovary.

When I first examined her, I found the abdomen swollen to about that of the sixth or seventh month of pregnancy. The tumour extended from the epigastrium to the pubis, but bulged considerably towards the left side. Its surface was irregular; and two large nodules, each the size of a cocoa-nut, existed about its centre. It was tense and firm to the feel, somewhat elastic, and without fluctuation.

The tumour was firmly fixed, and the seat of constant pain,—especially in the left lumbar region,—which was increased by pressure, by lying on the right side, or on assuming the erect posture. The urine was of a slight yellow colour, and normal; the digestive, respiratory, circulatory, nervous, and integumentary organs appeared to be healthy. She had observed the tumour seven months before her delivery; and it has gone on gradually increasing, and been somewhat painful, from the first. *Eight leeches were ordered to the most painful part of the abdomen.* The local pain was relieved by the leeches. On Nov. 12, my attention was directed to the urine, which

presented a copious white deposit, occupying two-fifths of the jar, while the supernatant portion was of a light amber colour, and unusually viscid. The deposit was determined, by the microscope, to consist of pus, mingled with a few compound granular corpuscles. The clear portion was strongly coagulable by heat and nitric acid. At first I imagined that the cyst had burst into the vagina; but the patient and nurse assured me that there was no discharge between the intervals of micturition, and that all the fluid came from the bladder. The urine presented the same characters during the next three days,—the amount discharged during the twenty-four hours, being about three pints. On the 15th, the tumour had somewhat diminished in size, its hardness and density had disappeared, and distinct fluctuation was perceptible in it. *A broad flannel roller was ordered to be applied firmly round the abdomen, and compression made by means of paste-board, previously soaked and modelled to the abdominal surface.*

From this time, the abdomen rapidly diminished in volume, while the amount of purulent viscous fluid discharged from the bladder, varied from three to five pints in the twenty-four hours. The appetite and general health continued good; and she was ordered nutritious diet, with four ounces of wine daily. On the 23d, the amount of pus contained in the urine was greatly lessened, and the clear portion presented only a slight haziness on the addition of nitric acid. On the 27th, the abdomen had regained its natural size, although a dense mass—evidently the collapsed ovarian sac—could readily be distinguished, occupying the left iliac and hypochondriac regions. The urine now was natural in quantity, and presented only a slight sediment, consisting of oxalite of lime, and a few pus globules.

From this period, she may be said to have recovered. She suffered occasionally from uneasy feelings on the left side; sometimes amounting to pain, which were relieved by the application of four leeches, followed by a small blister. She was dismissed on the 18th of December, expressing herself as being well in every respect. The indurated mass in the left iliac region was greatly diminished in size, but still very perceptible in the feel, though not to the eye.—*Monthly Journal, Feb.* 1849.

London Journal of Medicine, March, 1849, *p.* 285.

183.—ON OVARIOTOMY.—By Dr. C. Clay, Manchester.

[At a meeting of the Sheffield Medical Society, Dr. Clay gave the following account of the results of ovariotomy in his own practice.]

He said the operation had been brought under his notice by Mr. Lizars, in 1822, and in 1842 he performed his first operation. His three first operations were successful. He had now opened the abdominal cavity 39 times. Dr. Clay gave the following analysis of the results of his operations:—

1—Purely uterine; fatal immediately after the operation; diagnosed correctly as fleshy tubercle of the uterus; the tumour weighed twenty-seven or twenty-eight pounds.

1—Large uterine tumour with ovarian disease. Fatal.

1—Large ovarian tumour with enlargement of the uterus. Tumour and uterus removed. Fatal from the effect of a fall on the fourteenth day after the operation. The incision had healed, and the patient was apparently convalescent.

5—Exploratory only; the operation not proceeded with; of these, four recovered, and one died twenty days after the operation.

31—Cases of uncomplicated ovarian disease. Of these, 22 recovered and 9 died. One has since died of fever, five years after the operation.

Recoveries (including exploratory incisions) 26; deaths, 13.

Dr. Clay was rather doubtful as to the value of chloroform in ovariotomy. The two cases in which he had used it were both fatal. In other opera-

tions he had used it with the best results. He had less dread of adhesions now than formerly, and he would now have completed the operation in three out of the five exploratory cases in which the operation was abandoned. On meeting with a very firm adhesion, he would in future adopt the plan of cutting round the adhesion, leaving the adherent portion of the sac attached to the abdominal parietes, omentum, or bowel. The majority of cases of ovarian disease are situated in the right ovary. He had examined nearly five hundred cases, and four-fifths were of the right ovary. He considered that tapping should be deferred as long as possible; when once performed it must be repeated more and more frequently till it becomes necessary every ten or fifteen days. Dr. Bird's plan of a small incision is not applicable in large and solid ovarian tumours, or where any adhesions exist; nor could Mr. Brown's plan of compression succeed in large and solid tumours. Three of Dr. Clay's cases were successful from the ulcerative process, the removal of the disease being impracticable. He considered the temperature of the room at the time of the operation of the greatest importance; the operation should never be commenced if the temperature of the room is below 71 or 72 degrees, and on this account he preferred a small room to a large one for the operation, as being more readily heated. One of Dr. Clay's patients became pregnant after the removal of one ovary, thus proving the sufficiency of one ovary for the process of conception. He regarded the third and ninth day after the operation as peculiarly critical.

Provincial Medical and Surgical Journal, March 7, 1849, p. 132.

ADDENDA.

184.—ON THE PATHOLOGY AND TREATMENT OF EPILEPSY.—By DR. R B. TODD, F.R.S.

[The following valuable remarks were published too late to be introduced in their proper place, in the former part of this Number, and we therefore give them here.

Dr. Todd first directs our attention to the consideration, What part of the nervous centres is mainly disturbed in epilepsy? Though there is no doubt that the spinal cord *is* disturbed during the complete paroxysm, yet, Dr. Todd says,]

The nature of the convulsions shows that the spinal cord is not primarily affected. In my former lectures I have shown that the character of the convulsion dependent on primary irritation of the spinal cord is *tetanic*, with more or less rigidity of the muscles and opisthotonos; and this can be clearly demonstrated by experiment. But although the convulsions of epilepsy are often complicated with a good deal of tetanic spasm, they nevertheless always present features which distinguish them, in a very marked way, from the tetanic convulsions, by the alternate contraction and relaxation,—violent combined movements, resembling voluntary acts, succeeded by relaxations, to be again succeeded by violent contractions.

Furthermore, if the spinal cord were effected primarily, we could not explain the sequence of the phenomena in the complete paroxysms of epilepsy. If the spinal cord were primarily disturbed in epilepsy, the sequence of the phenomena would be—first, muscular disturbance, in consequence of the state of disturbance of the cord; then impairment of consciousness,

in consequence of the extension of the disturbed state of the cord to the brain. Now the natural sequence of the phenomena is—first, loss of consciousness; secondly, muscular convulsions.

Moreover, the supposition of the primary existence of disturbance of the spinal cord leaves us altogether without the means of explaining the phenomena of that form of epilepsy which, in its consequences to the patient is quite as formidable as that accompanied by convulsions. I mean the form which consists simply in loss of consciousness, which lasts for a variable term, and then the patient recovers himself.

Lesions of the spinal cord, it is now well known, do not affect consciousness. You may have nearly the entire cord severed from the brain, and yet consciousness will be retained. A man falls from a height, and fractures his cervical vertebræ, smashing a considerable portion of the cervical region of the spinal cord; he is taken up paralysed, in both sensation and motion at all points below the head, but *consciousness is undisturbed.*

In the convulsive diseases confessedly spinal in their origin—namely, in tetanus and laryngismus—consciousness is undisturbed, or but slightly affected, however violent the convulsions may be.

It seems, therefore, certain, not only that a highly disturbed state of the spinal cord will not impair consciousness, but also that that state of disturbance of the cord is not prone to extend itself to the brain, and to interrupt the functions of that organ.

And these arguments applied to the ordinary spinal cord of anatomists—the intra-spinal nervous mass—are equally opposed to the location of the disease in the true spinal cord of Marshall Hall, or in the sensorium commune of Prochaska. The sensorium commune of Prochaska is the spinal cord *plus* its inter-cranial continuation as high up as the crura cerebri. But primary irritation of this latter part produces the same phenomena as that of the spinal cord, with the addition of more or less laryngismus; therefore it is not the part first affected in the epileptic fit. It is plain, then, that the primary disturbance in the epileptic paroxysm must be located in some part of the brain.

Now this organ is divisible into certain parts, each of which, there can be no doubt, enjoy a separate proper function, notwithstanding that all the parts are intimately united to each other.

These parts are—

First, the hemispheric lobes, consisting of the convolutions and the large mass of fibrous matter connected with them.

Second. The corpora striata and the optic thalami, in intimate connection with,

Third. The medulla oblongata.

Fourth. The corpora quadrigemina, in intimate connection with, and part and parcel of the mesocephale.

Fifth. The cerebellum.

Pursuing the method of exclusion, I hope to arrive at the determination of the part, the disturbance of which gives rise to the phenomena of epilepsy, and of the epileptic paroxysm.

I shall first eliminate the medulla oblongata. An affection of this part such as could provoke convulsions, would give rise to *tetanic*, not *clonic* convulsions; and in some cases it would act so powerfully and so directly upon the muscles of respiration, that it would probably in many instances annihilate that process altogether. It is true, indeed, that a certain extent of laryngismus often complicates the epileptic convulsion; but primary disturbance of the medulla oblongata would render laryngismus a constant and necessary accompaniment of the epileptic fit, *which is not the case.*

Primary affection of the medulla oblongata does not explain the early and constant loss of consciousness, which is pathognomonic of epilepsy, and which is often its *only* symptom.

Diseased states of the medulla oblongata show themselves in impaired de

ıutition, in vomiting, in altered rhythm of the respiratory movements, in ı abnormal proneness to emotional excitement, but not in impaired intelctual action, nor in any affection of consciousness. We cannot admit, ɐn, that epilepsy is due to a primary disturbance of the medulla oblonata.

We come next to the corpora striata and optic thalami. These remarkle ganglia, although intimately connected with each other, are nevertheıs very different in structure, and probably, also, very different in function. hey are no doubt directly concerned in the development of voluntary otions and of sensation, and their intimate anatomical union is in harmony ith the close connection and interdependence of sensation and motion. hey have nothing to do with intellectual operations, and therefore not with ɔnsciousness; their functions seem limited to the simple exercise of ıe will, or to that of the perception of some impression made on a sentient rgan. If the corpus striatum or optic thalamus be diseased, you have aralysis of motion or of sensation, or both; but a sound state of intellcıal power, and of the consciousness, is quite compatible with extensive isease of both of these organs, provided it does not extend beyond them. fechanical irritation of these bodies does not produce convulsions, nor does ny morbid state of them ever give rise to these disturbances of motion. t is clear, then, that these bodies can no more claim to be the seat of the rimary disturbance in epilepsy, than the medulla oblongata.

Has the cerebellum any share in the production of epilepsy? I think we ust answer this question in the negative likewise. The cerebellum has ıo influence on consciousness: the absence of the cerebellum is perfectly ɔmpatible with consciousness, and a certain amount of intellectual power, ınd these powers remain intact even where there is considerable disease of hat organ. Moreover, mechanical irritations of the cerebellum do not give ise to convulsions.

There remain, then, only two parts of the brain in which we can localize the primary disturbance in the epileptic paroxysms—namely, the hemispheric lobes, and the mesocephale.

I will at once confess that my reflections upon this subject have led me to the conclusion that both these parts of the brain are greatly concerned in the production of the epileptic state, and in the development of the paroxysms. First and mainly, the hemispheric lobes; secondly and consecutively, the mesocephale.

You will bear in recollection that the complete epileptic paroxysm exhibits two features essentially distinct from each other; first, the loss of consciousness; secondly, the convulsions. The loss of consciousness and the other mental phenomena are dependant upon a disturbed state of the hemispheric lobes; the conclusions upon a disturbance of the mesocephale, consecutive to, and derived from, the disturbance of the hemispheric lobes.

There is no point in physiology more clearly made out than that the organ which is immediately active in the manifestation of intellectual operations is the convoluted surface of the brain, and the fibrous mass connected with it—the hemispheric lobes. Every fact in comparative anatomy points to this conclusion. Experiment confirms it likewise. When the hemispheric lobes are removed from a pigeon, as in Flourens' celebrated experiment, which I have more than once repeated, the animal becomes a mere living machine, capable only of manifesting the physical phenomena of life, exhibiting no indication of mental operation nor of consciousness; it fell into the deep unconsciousnes of epilepsy.

In all instances where the nutrition of the cerebral hemispheres is disturbed, the intellect suffers; you have delirium or a maniacal state; or if the disease be of a kind tending to check nutrient change, or to destroy it, you have more or less sopor. So, also, inflammatory states of the arachnoid and pia mater covering the convolutions of the brain, disturb the intellectual

operations, because they are so intimately connected with the hemispheric lobes, being as it were the carriers of nutrition to them, that the nutrition of these membranes cannot be disturbed without perverting that of the convolutions themselves.

Although it is perfectly true, that the brains of persons dead of epilepsy in its earlier periods will exhibit, as Foville remarks, "nothing, absolutely nothing, which differs from the normal state," unless they have died in the attack, when the cerebral congestion which exists is, in the words of the same distinguished physician, "a feature not of epilepsy, but of the state of asphyxia induced by it, and in which the patients have died;" still, in the more advanced stages of the disease, when the patients have experienced many fits, morbid appearances are met with, and these affect the hemispheres of the brain chiefly. You have among the most common, opacities and thickening of the membranes, shrinking of the convolutions, enlargement of the sulci between them, increased subarachnoid fluids, alterations of color and consistence of the grey and white matter of the hemispheric lobes. These alterations must be looked upon as the accumulated effects produced by the various paroxysms. Each fit does some amount of damage to the brain: in the interval the brain recovers itself to a great degree, when a new fit comes on, and new mischief is done; and so the repetition of the paroxysms leaves the brain altered as I have described it.

But, observe, the alterations are not of the cerebellum, nor of the medulla oblongata, nor of the corpora striata or optic thalami,—but of the hemispheric lobes. But an important question remains: Can a disturbed state of the hemispheric lobes induce or excite convulsive movements? The proper answer to this question appears to me to be this: under ordinary stimulation of the substance of the hemispheres, the fibres are incapable of exciting motion.

It is not the office of these fibres to propagate the nervous force to muscles, but to other nervous centres. Their function is to establish communications between the great sheet of vesicular or grey matter which covers the convolutions of the brain, and the corpora striata, optic thalami, and mesocephale, so that changes in any of these centres may be propagated from any one to any other, or to all the rest. Hence the sections and irritations by mechanical and galvanic means to which these fibres have been subjected in the hands of various experimentalists, produce no disturbance of motion, so long as the irritation is strictly confined to them.

So far, then, anatomy and experiment denote to us that of themselves these fibres of the hemispheric lobes cannot excite motion, but that they may do so through their influence upon other ganglia of the brain; and such phenomena as I have referred to at the commencement of the lecture, as a convulsive affection of the whole of one side of the body, evidently brought on by the deposition of tubercular matter on the surface of the cerebral hemisphere on the opposite side, and its consequent irritation, show that convulsive movements may be excited by a superficial lesion of the hemispheric lobes.

Hence we must not deny to these lobes a certain power of exciting motion, either directly or indirectly, through their influence upon other ganglia of the brain. But it is important to remark that the influence of the hemisphere is most manifest for this purpose when the lesion is superficial; that is, when it affects the grey matter. A deposition of tubercle, such as took place in the case I described at the commencement of the lecture, would produce little or no disturbance if it took place in the white substance; it would interrupt the functions of some of the fibres; but when deposited in the vesicular matter, among the particles of the generating plate of the nervous battery, the development of the nervous force becomes seriously impaired.

From all these facts, then, I infer that a disturbed state of the hemispheric lobes may undoubtedly give rise to so much of the phenomena of

the epileptic paroxysms as refers to the affection of consciousness and sensibility, and that it may, *in some degree* at least, contribute to the development of the convulsions. We must not forget that, in forming a theory of the pathology of epilepsy, we have to explain not a continuous state of disturbed sensation and motion, but a malady, the grand feature of which is the *periodical* recurrence of the paroxysms, the patient being wholly or almost restored to his normal state in the intervals between the attacks.

Now, it is not a little remarkable that there is no organ in the body which exhibits the same kind of periodical activity and quiescence in the performance of its functions, *as the hemispheric lobes*. The periodicity is manifest in the phenomena of sleep: throughout life the tendency exists, that for a certain period each day the state of sleep comes on—when intellectual acts cease, the will is not exerted, the perceptive powers remain quiescent, the channels of sensation are closed. This tendency is greatest in the early periods of life than at any other time—greater of all in infancy, when sleep engrosses the largest portion of time: very marked in childhood, less imperious in adult life, but assuming a somewhat increased influence in second childhood—OLD AGE.

I say, then, that the periodical character of the phenomena of the normal nutrition of the hemispheric lobes of the brain denotes strikingly that these organs have much to do with the primary disturbances which cause those periodical paroxysms which constitute epilepsy. But there is another part of the brain to which I think we must assign some share in the production of epilepsy.

This is that part of which the corpora quadrigemina form a prominent portion—the upper and posterior part of the mesocephale, the nodus encephali, the connecting medium between the several parts of the encephalon, which is not only anatomically related to all the constitutional parts of that organ, but possesses inherent powers of its own of great and general influence upon the movements of the body. I have already referred to this part in my last lecture, as being the centre of emotion: as such, it is much influenced by mental states; and we know that epilepsy is often brought on by the shock produced by seeing another fall into a fit.

Flourens states, that while superficial sections of the corpora quadrigemina produce no other effect than the impairment or loss of vision, deep sections produce general convulsions. I have been desirous of ascertaining whether the parts within the cranium, if excited by the stimulus of galvanism, would give rise to any phenomena similar or analogous to those produced by galvanic stimulation of the spinal cord. Accordingly, I determined to subject them severally to the action of the magneto-electric rotation machine,—a most convenient instrument for physiological experiments.

The experiments were performed on rabbits. I took the spinal cord first; here we had the well-known tetanic effects to which I have already frequently referred. Next I tried the medulla oblongata: the effects of the stimulation of this organ were much the same as those produced by irritating the cord. I then tried the corpora quadrigemina and the mesocephale. Having passed fine brad-awls into the cranium in such a direction as I had previously satisfied myself would lead to this organ, I subjected it to the influence of the machine: general convulsions were produced, of a character essentially different from those which resulted from stimulating the spinal cord or the medulla oblongata. They were combined movements of alternate contraction and relaxation, flexion and extension, affecting the muscles of all the limbs, of the trunk, and of the eyes, which rolled about just as in epilepsy.

On inserting the awls into the hemispheric lobes, still different effects were produced by the application of the machine. I could observe nothing like true convulsions; but slight convulsive twitchings of the muscles of the face took place, which were no more than what would be caused by the stimulus of galvanism acting upon the nerves of the face. These experi-

ments, which I repeated several times, and each time with like results, seem to denote that convulsions are modified according to the part of the cerebro-spinal axis which is primarily excited: if it be the spinal cord, they are tetanic; if the medulla oblongata, they are tetanic likewise, other parts being involved; if the corpora quadrigemina and the mesocephale, they are epileptic; if the cerebral hemispheres, you scarcely have any convulsions, but slight twitchings of the muscles.

Weber, in his excellent essay on Muscular Motion, published in Wagner's "Handworterbuch" of Physiology, refers briefly to similar experiments, performed by himself on the brain of a frog, and leading to the same results; and he draws this conclusion, that "the tonic convulsions, as trismus and tetanus, are the effect of disturbance of the functions of the spinal cord; whilst the clonic convulsions are due to derangements of the functions of certain parts of the brain."

Thus, then, I come to this conclusion respecting the parts of the nervous system which are directly concerned in the production of the epileptic paroxysm. The part of the encephalon primarily disturbed, is the hemispheric lobes: if the disturbance do not go beyond a certain point, the phenomena are limited to loss of consciousness and impaired intellectual action, with more or less of sopor. But if the disturbance be considerable, then the tubercula quadrigemina and mesocephale become involved, and *epileptic convulsions* are produced. If the disturbance of this centre be very great, the medulla oblangata and the medulla spinalis become much excited, and the convulsions are complicated with a good deal of the tetanic character.

We know that there is great variety in the intensity of the epileptic paroxysm, *i. e.*, not only in the intensity and duration of the coma, but also in the violence of the muscular paroxysm: all this depends on the nature and force of the primary disturbance in the cerebral hemisphere, but in all instances the hemispheric lobes are first disturbed, next follow the corpora quadrigemina, and upon the intensity of their disturbance depends the extent to which the medulla oblongata and the spinal cord are engaged.

[Dr. Todd next discusses the question of what is the "intrinsic nature of the disturbance of the brain in this malady, and the exact organic condition of it which is capable of exciting the epileptic phenomena."]

Is it (says he) a state of inflammation? or one of congestion? or is it a condition the opposite of congestion—one of deficiency of blood? or, in fine, is it a perverted nutrition, due more to a depraved *quality* of blood, rather than to alterations in its *quantity*, but by no means independent of the latter?

[Dr. Todd states confidently, that the morbid state is neither one of inflammation, nor, as is more commonly believed, of congestion. He shows that anæmia, a state the opposite to that of congestion, favors the occurrence of epilepsy; and that frequently enormous congestion of the brain occurs, in cases of asthma, chronic bronchitis, and suffocative catarrh, without inducing anything like the epileptic state. Dr. T. then proceeds to consider Dr. M. Hall's views of the pathology of epilepsy. He says,]

Dr. Marshall Hall attributes much of the phenomena of epilepsy to vascular congestion. He has put forward the following theory of epilepsy. He says:—"1. Some source of irritation, acting in a reflex or direct manner, excites the spinal system. 2. Contraction of certain muscles of the neck, compression of the veins, and congestion of the cerebrum, with cerebral symptoms—cerebral epilepsy—are the consequences. 3. Then follow laryngismus, with every formidable convulsive symptom, spinal epilepsy, and congestion of the encephalon in a tenfold degree, with all its dire effects on the intellect and on the limbs."

Admitting, as I do, the great ingenuity of this theory, I cannot accept it as a correct explanation of the phenomena of epilepsy, or as adequate to explain the various and complicated symptoms of that malady.

[Dr. Todd does not agree with Dr. Hall, because he thinks that it is *not*

proved, either that contraction of the platysma compresses the veins of the neck, or that there is any necessary connection between laryngismus and convulsions. He himself is of opinion that the anatomical disposition of the platysma unfits it for compressing the veins: and with respect to the laryngismus, he has found that on administering hydrocyanic acid, which developes a marked epileptic condition, to animals in which the trachea was previously opened, the convulsions were not prevented from taking place. Dr. Todd then proceeds to say:]

We may ask, is epilepsy due to an anæmic state of the brain,—to an imperfect supply of blood to that organ?

Although I cannot admit that epilepsy is commonly due to an anæmic state of the brain, still I must say that there are more facts in favor of this view than of the congestive theory, and that an imperfect supply of blood to the brain is very often associated with the epileptic condition. I have already referred to cases in which epilepsy had supervened upon an anæmic state. These might be multiplied considerably, did time permit. What is particularly deserving of attention is the class of cases where convulsions ensue upon excessive uterine hemorrhage,—cases long recognised by the most experienced obstetrical physicians. A cachectic state, in which the red particles of the blood are only very imperfectly developed as to quantity, is very apt to accompany epilepsy.

We see this frequently in hospital practice, in a very hard-working class of men—compositors in printing-offices, especially in those of newspapers. These men frequently work all night; and to support them in their toil, they addict themselves to the frequent use of spirits or other fermented liquors. General nutrition fails; the red particles are imperfectly regenerated, and the patient becomes epileptic.

Patients labouring under chronic disease of the kidney are much more apt to become epileptic, if they are pale, and if their blood is deficient in its red particles.

House-painters, or others exposed to the contanimation of lead, are apt after some time to fall into a fearfully cachetic state, of which a principal feature is the deficiency in the red particles of the blood. I have seen several persons, under these circumstances, become epileptic shortly before death, and, in fact, die in consequence of the violence of the epileptic paroxysms. All these are striking instances to show how blood deficient in quantity—deficient in one of its most important staminal principles (the others, perhaps, not being quite normal), and, perhaps, contaminated by the presence of some foreign noxious principle, is favourable to the production of the epileptic state.

Experimental physiology supplies us with very striking facts to show that an insufficient supply of blood to the brain is very apt to occasion epileptic convulsions. Every one who has witnessed the slaughter of sheep, which is effected by dividing the great arteries in the neck, must have observed the strong convulsions which so frequently precede death in animals killed in this way. All animals killed by loss of blood exhibit the same phenomena precisely, and die with convulsions of a more or less violent kind.

Dr. Seeds many years ago performed a series of experiments to observe the phenomena accompanying the deaths of animals by loss of blood. In all the cases convulsions preceded death.

In Sir Astley Cooper's experiments, by the application of ligatures to the carotid and vertebral arteries, the functions of the encephalon seemed more influenced by occlusion of the latter than of the former arteries. A considerable portion of the blood of the carotids is distributed to the external parts, to the membranes, to the parietes of the cranium: and those branches which supply the brain anastomose very freely with the vertebral arteries.

When the vertebral arteries were tied or otherwise obstructed, the carotids having been previously tied, very serious symptoms ensued; a state of

insensibility was induced, which frequently was accompanied with convulsions, affecting the muscles of the eye-balls, as well as those of the extremities. In one experiment the carotids of a rabbit were tied, without any material effect. In five minutes the vertebral arteries were compressed by the thumbs, the trachea being completely excluded. Respiration stopped almost directly; *convulsive struggles* succeeded; the animal lost its consciousness and appeared dead. The pressure was removed, and it recovered, with a convulsive inspiration.

On a second compression of the vertebrals, similar phenomena ensued. Three times more the compression of the vertebrals was repeated, with like result. On the fifth occasion, says Sir Astley, the result was the same—namely, suspended respiration, convulsions, loss of motion and consciousness. These, surely, are symptoms very closely resembling those of epilepsy.

I come to this conclusion, that while it is highly improbable that a state of congestion *per se* gives rise to the epileptic paroxysm, it is extremely probable that the opposite state, one of anæmia or of imperfect supply of blood, does frequently cause the complete epileptic fit, and that such a state is much more to be feared and guarded against by practitioners than the state of congestion, not only because its consequences are more serious and more persistent, but also because they are much less amenable to the remedies within their reach.

At the same time, this state of anæmia is not in itself the cause of epilepsy. We have too many instances of epileptics in whom no indication of an anæmic state exists, to allow the admission that the influence of anæmia operates in any other way than as one of the most potent disturbers of the nutrition of the brain; and we are therefore led to class it with other causes of disturbance which interfere with and derange the normal nutritive processes of the brain, giving rise to irregular actions of certain of its parts.

Having freely discussed the more obvious disturbances of the circulation in the brain which have been and are set down as productive of the epileptic state, it remains for me to develop a theory of epilepsy such as seems most in accordance with our knowledge of the physiology and of the pathology of the brain. I would lay it down that epilepsy denotes a state of abnormal nutrition of the brain. This abnormal nutrition shows itself in the unnatural development of the nervous force at particular times, in such a manner as to disturb the functions of the whole cerebro-spinal centre, but of the brain in particular.

These periodical evolutions of the nervous force which give rise to the complete epileptic paroxysm may be compared to the electrical phenomenon described by Faraday under the name of *disruptive discharge*. We know that this phenomenon requires for its production, first, a highly-charged or polarized body, which, when it reaches a certain point of tension, may be made instantaneously, and with violence, to discharge its electricity to a conductor. Thus the abnormal nutrient actions of the brain, in epilepsy, tend to produce a polar state of the particles of the hemispheres, of the tubercula quadrigemina, and of the mesocephale, which, when it reaches a certain tension, discharges itself, and induces with great violence a rapid polarization of the neighbouring particles, involving in the general disturbance the medulla oblongata, the cerebellum, and the spinal cord.

In some instances the tension may be limited to the hemispheres of the brain—then consciousness and intellectual action only are disturbed: either a comatose state is induced, which lasts for a certain time, or mania or delirium are produced. In such cases the state of tension may pass off slowly and gradually without any distinct discharge, and so the nervous matter may assume a state of equilibrium, without creating any serious disturbance of the other parts of the cerebro-spinal centre. In other cases the hemispheres and mesocephale pass quickly to the highest degree of tension, and a rapid discharge takes place, exciting the other parts of the

brain and the spinal cord, with all the violence of the discharge from a highly charged Leyden jar, or the shock from the electrical organs of the torpedo or gymnotus.

The gradual and silent manner in which this state of tension is induced in the brain, and the absence of all appearances of mischief recognisable by our means of investigation in recent cases, the rapidity with which fit succeeds fit in the acute cases, leaving likewise no trace of organic mischief, denote that the peculiar state of the brain in epilepsy is brought on not by any change in the quantity of the blood, but by the accumulation of some material in the blood, which, acting on the brain as a poison, excites this polar state, and this disruptive discharge, and so escapes from the system, leaving the brain free from disturbance until a fresh accumulation excites a new paroxysm. The same comparison may be used here as I have already employed in speaking of other convulsive diseases. The nervous battery is excited by an abnormal fluid,—a fluid which causes it to develope the nervous force in irregular quantity,—a fluid, which when fully charged with its particular morbid element, excites a high degree of tension of the cerebral nervous matter, which can recover itself only by a discharge, which produces more or less serious disturbance of the neighbouring parts of the brain.

Under this view the infinite variety in the character and violence of the epileptic fits would be accounted for by variety in the quantity of the morbid material which contaminates the blood,—the poison which disturbs the normal actions of the brain,—by the different intensity with which it affects one part more than the other,—the comatose symptoms, being the more developed as the cerebral hemispheres are affected,—the convulsive symptoms, when the chief disturbance is in the mesocephale,—and, perhaps, also by difference in the quality,—the virulence—of morbid element.

This humoral doctrine of epilepsy is supported by a host of striking facts. The influence of certain poisons—as prussic acid and œnanthe crocata—in the production of artificial epilepsy, the exact counterpart of the disease as it affects the human subject, is one of the most important of these. Saillant, a writer in the memoirs of the French Royal Society of Medicine, (ann. 1782-83), concludes a paper detailing some experiments on the artificial production of epilepsy, with these remarks, "We are content with concluding that it is easier to produce an artificial epileptic paroxysm through the blood than by irritation of the brain and nerves." Saillant's experiments consisted chiefly in injecting air into the veins.

A second class of facts, bearing most strongly on this view of the nature of epilepsy, is the frequent connexion between this disease and imperfect eliminatory action of the kidney, a connexion which I have no doubt ere many years we shall find to be very much more frequent than is even now suspected.

Nay, a temporary functional suppression or deficiency in the secretory action of the kidney, would allow the urea, and perhaps certain other elements of the urine, to accumulate in the blood to such an extent as to exert a poisonous influence on the brain, and to develope the epileptic paroxysm. The fact, first I believe brought to light by Dr. Lever, that the urine of women who have suffered from puerperal convulsions is sometimes albuminous, suggests that in some of the patients who suffer this form of epilepsy the disease may be referred to defective action of the kidney. This point, however, has yet to be worked out, and when physicians come more generally to look for the causes of morbid phenomena in something beyond mere excess or deficiency of blood, we shall probably obtain some satisfactory elucidation of it.

A third class of facts favourable to this view is derived from the diseases confessedly humoral, and the paroxysmal character which they are apt to assume. I would allude more particularly to the effects of the paludal poison, and to gout. Under the influence of the former, we have periodical

paroxysms almost convulsive in their nature. A severe fit of ague in its cold stage is not far from an epileptic convulsion. The marsh poison, whatever be its dose, shows it effects in regular periodical paroxysms: the poison accumulating in conjunction with certain nutrient changes in the blood, reaches the quantity necessary to produce a paroxysm only at certain periods. The introduction of quinine checks this regenerating or cumulative power of the poison, and ultimately kills it. In gout we have an analogous tendency to the accumulation of the poison so as to occasion paroxysms. The regular development of the gouty paroxysm at the spring and fall of the year in some individuals, and its frequent occurrence at short intervals for a certain time, as once a month or once in two months, are phenomena analogous to the periodical development of the epileptic paroxysm. Lastly, we have the very important fact, that certain animal poisons, as that of small-pox, measles, scarlet fever, or even the poison of typhus may, on their introduction into the system, produce epilepsy.

An interesting question which I have found it convenient to postpone until now, is as to the validity of that distinction which I admit is useful for practical purposes, into *centric* or *eccentric* epilepsy. Under the theory which I have just enunciated, all epileptic cases are strictly centric—that is, result from a cause acting directly upon the centre.

But may not the cause originate at the periphery, and act upon the centre through incident nerves, affecting the brain through the spinal cord? To this question I think I must answer in the negative. Evidence is wanting to prove that the peripheral irritation of nerves is capable of exciting the epileptic paroxysm. You remember the remarkable conclusion of Saillant, which I quoted not long ago, "that it is easier to produce an artificial epileptic paroxysm through the blood, than by irritation of the brain and nerves." Then I may be asked, what becomes of the cases so generally admitted, in which epilepsy is caused by worms in the intestinal canal? in which, if you expel the worms you cure the epilepsy. I am not prepared to deny the occasional association of worms and epilepsy, nor their connexion as cause and effect; but I would affirm that worms cause epilepsy not by direct irritation of the intestinal nerves, the spinal cord and the brain, but by the disturbance of nutrition which they keep up. The mere presence of worms in the intestinal canal is an indication of deranged secretions there, and of a disturbance of its nutrition: worms do not flourish in a perfectly normal state of the intestinal canal. Therefore we may lay it down that there has been a disturbance of nutrition prior to the appearance of the worms, which is kept up and increased by the presence of the worms.

The terms *centric* and *excentric* are so far useful as directing attention to the *source* of the depraved nutrition of the brain; but epilepsy is always the result of such depraved nutrition, and it is highly improbable that it can ever be looked upon as produced by reflex action—that is, by a peripheral irritation propagated to a centre, and exciting great irritation there, involving spinal cord, and motor and sentient nerves.

[With respect to the *treatment* of epilepsy, Dr. Todd observes:]

In the general treatment of epilepsy, the practitioner must ever keep in view the three following objects: first, to remove sources of irritation, of disturbance of general nutrition, and consequently of contamination of the blood; secondly, by hygienic and moral means, to promote a healthy frame of body and mind; and, lastly, to find, if possible, some means of preventing the access of the fits, with a view to breaking the habit of their frequent periodical recurrence.

[In the fit, Dr. Todd thinks that no treatment should be adopted, beyond taking every precaution to preserve the patient from injury. As a means of *checking the access* of the paroxysm, he recommends the employment of anæsthetics, which he has often used with advantage. He says:]

The first case which presented itself was one of epilepsy, in which the fits were preceded and followed by mania. The patient was a young girl, aged 17: the fits were of frequent occurrence,—twice a week, and she was

subject to them for seven years. Within the last year the fits were accompanied by the maniacal state. This girl had been in a maniacal state for six days prior to her admission into the hospital: she was very violent, attempting to bite every one who came near her. She had even bitten herself.

In this case I administered ether on a sponge, holding it tightly over the mouth. The effect, to my great astonishment, and that of the bystanders, was instantanteous. Within a minute, noted by the watch, the patient fell off into a profound and placid sleep, which lasted eight minutes. She then awoke, and seemed disposed to be as violent as before. It was necessary to administer the ether five times, after which prolonged sleep was produced. She slept well that night, and from this time became quite manageable and controllable: she continued for three or four weeks in the hospital, and although she had two or three fits there was no return of the maniacal state.

I have since had many opportunities of administering ether, and subsequently chlorform, in cases of epilepsy. The cases which I have selected have been those in which, as in the case just related, the paroxysms have been accompanied by mania, or in which the paroxysms have been of frequent occurence—daily, several times in a day, once or oftener in a week. In these cases I have administered chloroform daily, often twice, sometimes three times a day, and always producing the full effect. I have not met with any instance of untoward result in some twenty-five cases; and the general conclusion at which I have arrived is this, that the frequent administration of the chloroform does no harm to the brain, and that it undoubtedly diminishes the frequency of the fits and exercises a very marked control over the maniacal state.

I have given it in cases in which there could be no doubt of the existence of organic disease within the cranium, either meningeal or cerebral, and with decided benefit. One old man, who had all the symptoms of diseased cerebral arteries, with perhaps, some amount of white softening, and severe epileptic fits, was distinctly the better for the inhalations, and became more intelligent, and his fits less frequent.

In puerperal convulsions, chloroform may be administered with advantage. I know of several cases which occurred in the practice of others, in which the fit yielded to the influence of the chloroform. My friend Dr. Simpson of Edinburgh informs me that, among upwards of two hundred women whom he had delivered under chloroform, he has had no case of convulsions. In the epileptic convulsions of children also it may be used. Shortly after I began to use ether in epilepsy, my friend Mr. Ceeley of Aylesbury, informed me that he had tried it with decided success in a case of infantile convulsions; and Dr. Simpson tells me that Dr. Robertson, president of the College of Physicians in Edinburgh, has administered chloroform in infantile convulsions with great success. The administration of chloroform in epilepsy requires further clinical research. Upon this subject I am at present engaged, and hope, at some future period to lay my results in a detailed form before my professional brethren. Perhaps some other anæsthetic may be found better suited to epilepsy than chloroform.

I am not without hope that some anti-epileptic agents—valerianic acid or valerianates—may be more efficaciously administered through the inhalation of chloroform than by the mouth. Mr. Savory, of Bond street, has sent me some specimens of valerianates held in solution by chloroform; but whether these substances will volatilise with the chloroform so as to admit of their introduction into the system in sufficient quantity, I have yet to learn.

I need scarcely remark, and yet I feel that I ought not to conclude the lecture without doing so, that chloroform must not be used without some careful precaution. One cardinal point is, that in its administration atmospheric air should be at the same time allowed to be freely inhaled: another

point is, that the administrator should not be eager to obtain a rapid effect, although he should aim at obtaining a full effect; a third, that the recipient should always be placed, during the administration of the vapour, in the horizontal posture; and, lastly, the practitioner should abstain from administering it in feeble cases, where the heart is diseased or feeble, and the circulation languid or otherwise disturbed: and in all cases he should bear in mind that chloroform is a very depressing agent, and he should provide accordingly.

[Amongst specific remedies Dr. Todd refers to valerian and the valerianates; and also to the *cotyledon umbilicus*, which, he thinks, after the recommendation of Mr. Salter, ought to be extensively tried.]

Med. Gaz., *May* 11, 1849, *p.* 815, *and May* 18, *p.* 857.

185.—ON THE USE OF COTYLEDON UMBILICUS IN EPILEPSY.—By Joseph Bullar, Southampton.

[Dr. Bullar gives the following as the result of his experience in the use of this remedy, of which an account is given at p. 56 of this number.]

Mrs. T., 33 years old, the mother of several children, and of a highly nervous temperament, had been epileptic for seven years. The fits had gradually increased in frequency and severity, so that during the twelve months preceding the use of the cotyledon, she had every three weeks an attack of eight or nine fits following each other for twelve or twenty-four hours. She has, with occasional intermissions, steadily taken the cotyledon since April, 1848. (more than twelve months), and she has had only *one* fit (and that not a violent one) during the last seven months. Her general health and her nervous energy have improved, and she is unwilling to leave off the medicine.

The second case is that of an unmarried woman, about twenty-two years old, of a vigorous organization, and muscularly strong, whose general health, except slight leucorrhœa and habitual costiveness, was good. She had been epileptic since she was six years old, the fits returning once or twice a week, once a fortnight, and very rarely with so long an interval as three weeks. No remedies had been of the slightest use, and she had been under the care of one of the best physicians in the South of England. Puberty worked no change for the better. She began to take the extract in April, 1848, and continued it with few intervals until November. The fits were at first aggravated, then they gradually diminished in number and in violence until they were simply short fits of faintness, without loss of consciousness. In November she went with her parents to France, since which time (and six months have passed) she has had only two of these "fainty" fits, and is in excellent health.

In neither of these cases can the epilepsy be said to be cured (and they are the most satisfactory ones I have seen), but they are sufficiently encouraging to persevere in the remedy for a disease which at present very much baffles us.

In consequence of the difficulty of obtaining fresh leaves, I requested Mr. Randall, chemist, of Southampton, to prepare an extract from the juice: and I have been in the habit of prescribing five grains of this in the form of a pill, twice a day, and in some cases three times. Even in the most inveterate cases it has speedily diminished the violence and frequency of the epileptic fits, with improvement of the nervous power. The patients have slept more quietly, dreamed less; their spirits have improved, and their general health. In one the fits at first were increased in violence; and in two or three there has been for a short time increased nervousness, requiring temporary suspension of the medicine: but in all these cases there has been great subsequent improvement. But those patients and those practitioners who are not disposed to give the medicine a long, patient, and steady trial, will be disappointed. In five inveterate cases (of from fifty-

eight to eight years' standing) I gave it for three months, and then discontinued it, for the fits still returned, although they were in all but one case fewer. From my subsequent experience as to the necessity of longer perseverance, I examined the details of these cases, and found sufficient evidence of remarkable diminution in the number of the fits in the three months' trial, when compared with the previous three months, to show, even in these almost hopeless instances, the virtue of the herb. A marked increase of the disease at first is probably a favourable sign, from showing some influence: increased nervousness should merely induce a temporary suspension; and if on the whole the intervals between the fits, and their violence are diminished, there are good grounds for perseverance. Possibly the length of the treatment may be diminished by increasing the dose. This is a point for further experiment, as, for obvious reasons I have proceeded with a new remedy with caution.

Some of the patients to whom I have given it have had no very marked derangement of the general health; others have been of a highly nervous temperament; and others with a look of exhaustion both of body and mind. Such have required no other means, except attention to the bowels, which are often costive, by a simple dinner pill.

When, however, with an excitable nervous system (or without it), there is a yellow eye, foul tongue, turbid acid urine, fœtid and disordered secretions from the bowels on given medicines, it is essential to purify the blood and fluids by a course of appropriate gentle aperients, which, acting like mineral waters, keep up a relaxed state of the bowels without exhausting, and, together with strict attention to food, air, exercise, and habits, restore the general health—a step usually necessary before any specific remedy will act satisfactorily. It is too well known that setting the general health to rights will not alone cure epilepsy, but no remedy can be available if this step is neglected.

In children, and especially boys whose general health is good, it is advisable to begin with a few brisk purgatives of calomel and scammony, followed by castor oil, to ascertain if the fits do not depend on worms. And in young men the state of the urethra should be inquired into, as an irritable urethra, attended with involuntary seminal discharges, may be one cause of the fits, and unless relieved by the use of the bougie, may render any other means abortive. *Medical Gazette, May* 18, 1849, *p.* 858.

[Since the article at our 56th page was printed, Mr. Salter has stated that he has got a fluid extract of the plant prepared by Mr. Hooper. Mr. S. says:]

I am informed by Mr. Hooper, that six pounds of the plant yielded two pints and a quarter of the fresh juice, and this was reduced by the process of inspissation to two ounces and six drachms. Now it will be found by calculations, that the dose of the fresh juice, which is one ounce—for I now give more than I did at first—is equalled by a little more than twenty-seven minims of this prepared extract. The doses may therefore be thus stated:

Fresh juice one ounce, or, Hooper's inspissated juice, half a drachm, twice daily.

I avail myself of the present opportunity to state that this (May) is the best time to collect the plant, as it is shortly about to flower, and the juices are richest. *Medical Gazettee, May* 11, 1849, *p.* 832.

186.—ON THE PATHOLOGY AND TREATMENT OF TETANUS, TRISMUS NASCENTIUM, AND LARYNGISMUS STRIDULUS.—By Dr. R. B. Todd, F.R.S.

[To prove that the spinal cord is the part of the nervous system affected in tetanus, Dr. Todd adduces the facts that tetanic symptoms, not to be distinguished from those of the real disease, are produced by the transmis-

sion of shocks from the magneto-electric machine through the spinal cord; and that strychnine, which can be shown to act upon the same part of the nervous centres, also produces similar symptoms. He then proceeds to say:]

The part of the nervous system affected is clearly the spinal cord, and at least the greater part of its intracranial continuation, the medulla oblongata; and it seems highly probable that the anterior horns of the gray matter of the spinal cord and the centres of implantation of the encephalic nerves, are more particularly affected.

And the nature of the morbid process is not one of inflammation, nor does it arise out of any alteration in the *quantity* of blood flowing through the cord; it is not due to any congestive state, nor to any anæmic state; it consists of an exaltation in the special property of the nervous matter; an exaltation in the generating power of that portion of the great nervous battery in which the chief cerebro-spinal nerves are implanted: in short, it is a state of exalted polarity of that centre, produced either by the extension of a similar polar state, developed at the distal extremity of some nerve, or by some modification of the nutrition of the cord caused by the development in the blood of a material having similar properties to that of the alkaloid, strychnia. Or, in the language of physics, the exalted polar state of the battery is due either to an altered condition of its generating and conducting plates, or to an increased activity of the fluid by which they are excited—perhaps, indeed, to both.

Such, then, is the pathology of tetanus. A man receives a wound—this wound occasions an irritated, a polar state of certain nerves, and this polar condition is communicated by a process of induction to the whole spinal cord, which, by some modification of the nutrition of the cord due to some altered state of blood, assumes that state the more readily, and retains it the longer. Unless we admit that the blood has some share in the production of the phenomena, we shall fail in explaining the occurrence of tetanus without injury, or the tetanus of infants, but more especially we shall fail in explaining its greater proneness to be developed in certain localities, or in certain states of atmosphere and climate.

[And surely the fact to which I have already adverted, of the much greater facility of inducing this polar state of the spinal cord by the introduction of certain substances into the blood even in almost infinitesimal quantity, than by mere mechanical irritation of the nerves, strongly points to and favors the conclusion, that a change in the natural condition of the blood may greatly promote, if not wholly cause, the development of the tetanic state; and this change in the blood may be caused either by the introduction into it of some new material from without, or by the generation within it of some new matter possessing highly poisonous qualities. All that I have said respecting the clinical history of the trismus nascentium, and of laryngismus stridulus, shows that these diseases must be precisely similar to tetanus in the essential points of their pathology.

The trismus, indeed, is only a very acute form of tetanus, and its endemic character, and its proneness to occur under circumstances unfavorable to free ventilation, and good general nutrition, are highly confirmatory of the view I have ventured to advocate of the probable influence of a morbid state of blood in promoting the polar state of the spinal cord and medulla oblongata.

Laryngismus differs from tetanus in the fact that the polar state of the nervous centre is less permanent, and that the medulla oblongata is more affected than the spinal cord. In tetanus, the spinal cord is more affected than the medulla oblongata. The proximity of the medulla oblongata to the centre of emotions, explains the extreme excitability of children suffering from laryngismus by mental emotions.

In laryngismus, there is nothing whatever of an inflammatory nature, nor is there anything of a congestive kind: it is most important that practitioners should be well impressed with this fact. Whatever congestion may arise in the nervous centres is venous, and is caused by the convulsive pa-

roxysms, which impede respiration, and consequently delay the return of the venous blood. It is, then, an effect and not a cause of the convulsive state.

We have in laryngismus only an exalted polarity of the nervous centres, caused either by peripheral irritation, as that of dentition, or by a morbid blood produced by imperfect feeding, artificial nursing, bad air, neglect of cleanliness, or associated with a highly scrofulous diathesis.

These views of the peculiar condition of the spinal cord in tetanus and the allied affections were, so far as I know, first put forward by Dr. Marshall Hall, to whom science is under great obligations for the introduction of sounder views on many points in the application of physiology to pathology. That distinguished physiologist, with whom I regret to find myself at variance on many points, in an interesting and valuable essay on convulsive affections, makes these remarks:—"Tetanus and hydrophobia consist in an induced spinal erethismus, the paroxysms consisting of augmented or excited spasm, from external excitants. The infant, under the influence of what I will designate the convulsive tendency, susceptibility, or erethismus, may therefore be compared to the patient attacked by tetanus. The causes are similar—irritated nerve, inducing spinal erethismus, and great susceptibility to excited reflex actions; the effects are analagous—tetanoid affections."

[Dr. Todd thinks that the ill success of our treatment of tetanus is partly due to forgetfulness of the fact that death takes place from exhaustion consequent on the frequent renewal of the tetanic paroxysms. He says:—]

The pathology and clinical history of tetanus point out three objects which the practitioner ought constantly keep in view in the treatment of it.

1. To support the strength of the patient as much as possible, so as to oppose the exhausting effect of the convulsive paroxysms.

2. To remove all possible sources of irritation or of depravation of the blood, in vitiated secretions, bad diet, impure air.

3. To diminish and reduce the exalted polarity of the nervous centres to their normal condition, and if possible, to effect this by means which will not exhaust or reduce the powers of the patient. Now, the first indication is of primary importance: if the patient can be duly supported, we gain time, and we have abundant proof that the natural powers of the system are often capable of doing the rest without any assistance from art. To accomplish this object, the practitioner should set himself diligently to devise means of giving nutriment and stimulants in the manner in which they may be most readily assimilated. As a general rule, this may be done best by giving them frequently, and in small quantities; and it is wonderful how much may be taken in this way if they are only administered with care and judgment.

Any process of depletion—by loss of blood, or by evacuants of any kind, carried to a great extent, would be highly objectionable, as being calculated to oppose the object in view. In addition, then, to the various articles of food best adapted to the assimilating powers of the patient, and also to wine, or other alcoholic stimulants, the practitioner ought not to withhold the liberal use of quinine, ammonia, iron, or other drugs, which experience tells us exercise a tonic power over the system in general—and he may give them in large doses.

The second point may be best attained by means calculated to promote the various natural secretions, especially those of the bowels, skin, and kidneys. But in administering remedies for these objects, care should be taken not to use those of a violent and irritating nature: drastic purgatives should be avoided; too profuse sweating or diuresis should be guarded against; and the practitioner should bear in mind that the object is to alter and improve, not to pull down.

To obtain the third object—namely, to reduce the polarity of the spinal

cord, is at once the most important and most difficult. The various sedative remedies—opium, hydrocyanic acid, belladonna, conium, tobacco—have been fairly tried and failed. Opium is not a sedative to the spinal cord; its use in tetanus may be laid aside excepting in small doses as a sudorific. In cold-blooded animals it exalts the power of the spinal cord, and it is not impossible that in warm-blooded animals it may have a similar tendency: it is, therefore, a remedy of little value in tetanus, save as a sudorific, and in large doses it may be of an injurious tendency.

Neither is hydrocyanic acid a sedative to the spinal cord; on the contrary, it tends to produce epilepsy, and to excite the polar state of the cord by induction from the brain.

Belladonna has a decidedly sedative influence, but it disturbs the action of the brain so much, that it is not a safe or manageable remedy. The same may be said of conium. Tobacco undoubtedly reduces the polar state of the cord, but it produces at the same time a state of fearful depression. It is likewise an unsafe and not a manageable remedy. I have seen more than one patient die *cured* of tetanus, under this remedy.

There are two agents, which certainly exert a considerable power over the polarity of the spinal cord, which have not yet been tried sufficiently fairly, and which I think fully deserve to be put extensively to the test of experience. These are—cold and chloroform.

Of cold, I can speak favourably from my own experience; I have tried it by the application of ice in ox gullets to the spine, taking care to renew them frequently. I have adopted this practice in tetanus, and in convulsions in which the spinal cord was much involved, and in other more partial states of exalted polarity of the spinal cord, and with a sufficient amount of success to justify me in forming a very favourable opinion of the powers of cold as a depolarizing agent.

In order to give the remedy a fair trial, great vigilance is required on the part of the attendants of the patient to renew the bladders very frequently, otherwise they become elevated to the temperature of the body. This should never be permitted, as it is only by the long-continued application of cold that the spinal cord can be reached by it.

Another point which the practitioner who uses cold in this way must keep in view is, that when the cold fairly reaches the cord, its influence is shown by a marked depression of the action of the heart, which leads to general depression and debility. During the application of the bladders in this way, increased vigilance will be necessary in the administration frequently, and at short intervals, of nutritious and stimulant substances.

Sometimes the depression of the heart's action reaches a point below which it would be unsafe to suffer it to go. Under these circumstances the ice must be removed, and kept off until the heart in some degree recovers itself, when it may be resumed. Thus by removing and reapplying the bladders from time to time, the influence of cold may be kept up sufficiently long to produce a favourable effect upon the cord without producing such an amount of depression as may operate to the disadvantage of the patient. But to carry out this plan great vigilance, and care, and judgment, will be needed on the part of the practitioner, in order that all precautions may be duly observed, and that the patient may be encouraged to persevere in the use of a remedy which involves some degree of personal discomfort.

Of chloroform, in tetanus or tetanoid affections, I have no experience. Two years ago, however, I performed some experiments, by which I satisfied myself that the analogous agent, ether, when introduced into the system of inhalation, exercised a most powerful controlling influence over the polar state of the cord, as induced by strychnine. In these experiments I found that previous etherization retarded the polarising influence of the strychnine; and that, after poisoning by strychnine, life might be prolonged for a considerable time by the administration of ether.

A guinea-pig was thrown into tetanus by a quarter of a grain of strych-

ame; immediately the tetanic symptoms showed themselves, he was etherized; the state of tetanus immediately passed off, in a short time, however, it recurred, and was again controlled by ether; and by thus repeatedly etherizing the animal when the tetanic symptoms reappeared, life was prolonged for many hours, whereas another animal of the same size, and poisoned at the same time by the same dose, but not etherized, died rapidly.

These experiments illustrated in a very striking manner the antagonistic power which ether (and chloroform as possessing identical virtues) can exert over the polarity of the cord. The great point which ought to engage the attention of practitioners in the application of these agents to the treatment of such cases as tetanus, is to know how to avail themselves of its depolarizing power, and at the same time to guard against the injurious effects of its depressing influence. Chloroform weakens the force of the heart,—sometimes diminishing, at other times increasing the frequency of its action. Hence, while administering it in tetanus, we shall find it necessary to use with increased diligence the means calculated to uphold our patient's strength; and we must take care that the sleep of chloroform does not prove to him the sleep of death, by depriving him too long of those supplies which alone can counteract the destructive asthenia.

In the absence of any experience of the use of chloroform in tetanus, I should advise that a patient be not kept under its influence for any length of time, and that if, after the administration of it, and after its more profound effects have passed away, he should continue to sleep, the sleep should be interrupted at intervals of an hour or of half an hour, according to his strength, in order to administer support. If the patient does not sleep after the administration of the chloroform, and if the effects pass off, then it should be administered a second time, and a third time; after which several hours should elapse before it is again administered, and then it should be given in a similar manner, taking care that it be given not more frequently than at three, or at most, four different periods in twenty-four hours.

These suggestions, however, are prior to experience; they want the support or the modification which observation only can give, and I should not venture to offer them were it not that it seems to me of great importance that we should not discard an agent so powerful as choloroform, against certain morbid states, without giving it fair play, sifting its merits and demerits, and employing it in various ways, so as, if possible, to secure the benefit of the former, and to guard against the disadvantages of the latter. In some cases of tetanus in which I have heard of chloroform being employed, it has seemed to me that the patient was kept too long under it at once,—that its renewal was at too short intervals,—and that sufficient precautions were not taken to counteract its depressing influence.

[Dr. Todd observes, with regard to *trismus nascentium*, that its rapid course does not allow much time for treatment. The plan which he recommends us to adopt, is that of frequent and copious affusion of cold water, especially over the back; care being taken quickly to rub the child dry, and to wrap it in warm blankets after each affusion.

At the same time attention must be paid to good feeding, and to the state of the bowels: and to the ventilation and temperature of the apartment. The indications of treatment, *in laryngismus*, Dr. Todd observes, are three: 1st, to remove all sources of irritation,—by giving purgatives to carry off accumulations or morbid secretions in the bowels,—and by lancing the gums freely *when they are swollen and inflamed, but not otherwise*. 2d, to promote healthy nutrition, by attention to the quality of the food, and by taking care that the child is fed slowly, and that it is not allowed to fast too long. 3rd, to diminish the excitability of the nervous system. Upon this subject Dr. Todd says:]

The plan of dashing cold water in the face, to avert an impending paroxysm, or to shorten an existing one, is generally attended with success, as regards the paroxysm. It is also, I think, useful in shortening the inter-

vals between them, by diminishing the excitability of the cutaneous nerves. This dashing with cold water should be administered liberally and rapidly, notwithstanding the conomitant inconvenience of wetting the child's clothes. In some instances the operation of drying the child and putting on fresh clothes is itself useful. On similar principles, I find it very useful to have the child well sluiced with cold water night and morning, and sometimes even a third time in the day. A large quantity of cold water should be dashed *rapidly* upon the back and shoulders, and along the spine,—a moderate pitcher of water being *at once* emptied upon them. The value of the remedy is greatly enhanced by the suddenness of its application. In this suddenness consists the skill of its administration: and unless this be well done, it had better not to be used. For this reason it is expedient that the practitioner should at first superintend its administration himself, and teach the nurse how to apply it.

The cold affusion not only diminishes the excitability of the cutaneous nerves, it likewise improves general vigour, stimulates the circulation of the skin, and consequently increases the action of that great emunctory, and contributes to promote a more healthy state of general nutrition.

If drugs are used, the most valuable (in addition to such purgatives as may be necessary to keep up a moderate action of the bowels) will be found to be those of the tonic and antispasmodic class. I have myself seen most advantage from the use of iron in combination with alkalies, potash, or ammonia. Assafœtida is extolled by some. Sir H. Marsh commends the old tincture fuliginis. The infusion of bark, the liquor cinchonæ of Battley, the tincture of bark, quinine itself (the chief objection to which is its intense bitterness of taste) will all prove more or less useful.

Depletion by bloodletting, whether general or local, may, I think, be completely discarded from the list of appliances at the command of the practitioner in the treatment of this malady. In most instances it may do great harm by impoverishing the blood, and increasing the excitability of the nerves, and weakening the patient. I have not met any cases in which it has appeared to be advisable, unless as a means of satisfying the prejudices of parents or others. The disease is clearly not inflammatory; all who have seen it on a large scale agree in this view: and whatever congestion may arise in the nervous centres is the result of the paroxysms, and not their cause. Some may think it advisable to use depletion for the relief of this congestion. Upon this point it is obviously impossible to lay down any general rule. In my own experience I have not met with any instance of congestion of this kind which has not been sufficiently easily relieved by purgatives and attention to diet.

Of all the remedies which are adopted to increase the tone and vigour of the nervous system, none is so potent as the exposure of the child to fresh air, especially to that of a locality different from that in which it had been accustomed to live. There are few who cannot bear testimony to the efficacy of this practice. In principle it should be carried out throughout the whole treatment of the case. The child should be kept, if possible, in an airy, well-ventilated apartment, of moderate temperature. Every thing like what is commonly called "coddling," should be avoided. The child should be lightly *but sufficiently* clad, and be kept free from all such articles of clothing as might in any way impede the superficial venous circulation, or interfere with the free action of the respiratory muscles. If complete change of air cannot be obtained, it is a good plan to take the child out daily in a carriage into the country, to some distance from its usual residence, where, if the weather be not too cold, it may be carried about in the open air.

Many practitioners have a fear of adopting the change of air system, lest the patient should incur the risk of bronchitis. This fear is, within certain limits, well founded. But I think it right to mention here, what I have not seen referred to elsewhere, namely, that one of these patients may have

the physical signs of bronchitis without the disease. A spasmodic state of the bronchial muscles frequently co-exists with the spasm of the glottis, often precedes it, and remains for a considerable time after it. This is accompanied by a generally diffused *rhonclus*, such as would occur in bronchitis. It subsides immediately the general state of spasm subsides. Of these points I have had frequent opportunity of satisfying myself.

Children often fall into what I would call a *laryngismoid* state, *i. e.*, a condition in which the tendency to laryngismus is manifest, with great nervous excitability. If the child cough, inspiration is attended with a croupy noise. Crying, or any forced respiratory act, exhibits similar phenomena. But no regular convulsive paroxysm occurs. In these cases great benefit is derived from daily exposure to the air, and from a treatment conducted upon the same plan as for the fully developed malady.

Medical Gazette, May 4, 1849, *p.* 866.

187.—CASE OF CROUP TREATED BY THE APPLICATION OF NITRATE OF SILVER.—By Dr. James Bryan.

[This case affords additional evidence of the utility of applying nitrate of silver to the larynx in cases of croup, as recommended by Dr. Blakeman and others, at page 127 of our Sixteenth Number. Dr. Bryan says:]

On the 21st of April of the present year, I was called upon by my friend, Dr. T. Beasly, to see with him the only child of Thomas Hutchinson, aged fourteen months, labouring under an attack of croup. From the conviction that it was a pure case of pseudo-membranous croup, little hope was expressed by Dr. B. that the child would recover. At 7 o'clock p.m., the first application was made into the larynx, with a solution of forty grains of nitrate of silver to the ounce of water. The bent handle of a silver spoon served as a spatula to depress and draw the tongue forward. The epiglottis was distinctly seen, and the sponge cut in a conical form, and firmly fastened to a properly curved piece of whalebone, was rapidly passed behind it, and into the larynx. A temporary spasm of the glottis followed, and a free discharge of membranous and mucous fluid took place. This was succeeded by an improvement in respiration. The pulse was one hundred and thirty per minute, and thready.

9½ P.M.—Respiration had improved somewhat; a free discharge of mucus by vomiting had taken place since the first application. The second application was followed by a copious flow of flaky and stringy mucus, white almost as milk; some blood from the nose was mixed with the discharge; epistaxis, however, has existed now and then, ever since the disease began.

22d. 8½ A.M.—The child has passed a tolerably easy night, free bilious evacuations from the bowels, the effect of two grains of calomel administered every two hours since yesterday morning. Respiration now easy; the head is not thrown back as before; the child is in a quiet sleep; pulse ninety-five and regular; drinks cold water freely since the first application of the nitrate.

Third application, sixty grains to the ounce, into the larynx, followed by less spasm, very little irritation, and by free expectoration. Continue calomel two grains every four hours.

7 P.M.—Three or four stools have been passed during the day. The child lies languidly on the pillow, with its chin raised, but quiet. The respiration dry and difficult. The first attempt at an application this evening failed, on account of the restlessness of the child, and the spasm which followed was great, and continued for several minutes. In the second attempt, I succeeded in passing the instrument far down into the larynx, and brought up with it a quantity of tenacious mucus. The withdrawal of the instrument was followed immediately by the discharge of a large quantity of thick

membranous, tenacious, stringy mucus, somewhat streaked and yellowish which resulted in the complete relief of the child, who laid back his head, and went to sleep in a few seconds.

23d. 8½ A.M.—The respiration of our patient is comparatively easy; slept well last night: has had four bilious stools. He is so much relieved, that we resolve not to apply the salt at present, but to hold ourselves in readiness to make the application should it be demanded during the day.

7 o'clock P.M.—The child is sitting on his mother's lap, playing with his toys. Respiration slightly stridulous; has taken bread and milk; had three stools during the day, and has slept comfortably. The throat, as far as can be seen, is free from the diphtheritic deposit, which, at the first and second visits, had been very evident, covering the fauces and soft palate with a milk coloured membrane. Made no application this time, but directed to continue calomel one-half grain every four hours, with one grain of quinine in syrup.

24th.—We met again at 9¼ o'clock A.M., and found the child lying comparatively easy in the cradle: but little sound in the respiration, which was but slightly impeded; had passed a comfortable night, slept well, taken nourishment, and passed three stools; no application; calomel to be continued; consultation to cease. Dr. Beasly informs me that the child got perfectly well, without a bad symptom, and that he thinks that the application was the means of saving its life. It will be seen that none of the usual remedies, such as bleeding, emetics, cathartics, tobacco, &c., &c., with the exception of a few grains of calomel, were used in this case.—*Phil. Med. Exam. British Record, Dec.* 1, 1848, *p.* 378.

188.—CASE OF ABSCESS OF THE KIDNEY, FOLLOWING SCARLATINA.—By Dr. J. R. CORMACK, F.R.S.E.

[After stating that purulent collections are not very unfrequently to be found in the kidney in fatal cases of small-pox, typhoid fever, pneumonia, &c., and remarking that it is singular that the same state should not have been found after scarlatina, Dr. Cormack proceeds to say:]

It is beyond all doubt, that in a large number, if not in most cases of scarlatina, there is—during the eruptive fever occasionally, but more often during desquamation—bloody urine, scanty urine, or suppression of urine; and that in these cases the urine is albuminous, and the patient affected with dropsy, and often with alarming coma or convulsions. When such cases terminate abruptly in death, we commonly find simply hyperæmia of of the kidneys, and a choking up of the tubes with epithelium; but if they prove fatal after a more prolonged period, that condition is found which is described as characteristic of advanced nephritis, and which has been so elaborately described by Rayer and other authors in connexion with scarlatina and albuminous urine. That this affection of the kidney should be so common is not at all surprising, when we remember the frequency of acute desquamative nephritis in connexion with scarlatina, and look through the microscope at the urine passed by the patients, and find it loaded with epithelium, and even with complete casts of the tubes, indicating the activity of the desquamation from the internal coat of the tubuli uriniferi. When this desquamation is excessive, it is easy to see how these small passages must become choked up with epithelium—and congestion, causing suppression of urine, and ultimately dangerous inflammation—be induced: but it still remains to be explained how it is that such changes should so rarely terminate in suppuration.

Rayer, in the second volume of his Traite des Maladies des Reins, p. 428, discusses very fully the subject of albuminous nephritis succeeding scarlatina, and gives most copious references to all the recent writers on the subject; yet in no part of his elaborate chapter does he mention pus having been found in the urine during life, or in the kidneys after death, in

scarlatinous renal disease: and in volume third, in his article on "Pyelitis," no reference is made to that disease occurring in conjunction with, or as a sequence to, scarlatina. I have made pretty extensive inquiries among many friends well acquainted with pathological anatomy, and from all of them have received the same answer, that they had neither seen nor read of scarlatinous renal nephritis terminating in abscess; nor has any one, except Dr. Bevill Peacock, informed me of having seen pus in the kidneys after scarlatina. That gentleman, however, states that he has seen diffuse suppuration of the kidney. In a note with which he favoured me, of date 23d of January, 1849, in reply to my inquiries, he says, "I do not know of any published cases of abscess of the kidney—true abscess, I mean, connected with scarlatina. I have never seen anything of the kind, though I have found diffuse suppuration in such cases."

[Dr. Cormack then relates the case of a boy aged between seven and eight years, who suffered from scarlatinous nephritis, and died on the 50th day. After death, a cavity, the size of a hazel nut, and containing pus, was found in the left kidney, and both kidneys presented the characteristic appearances of albuminous nephritis. Dr. Cormack makes the following, among other observations, on the case:]

The cortical substance, so pallid and devoid of blood-vessels on dissection, was greatly altered by long-continued disease. Congestion had, long before death, passed into active inflammation. There had been inflammatory granular exudations into, and around, the tubes, excited by the pressure of the gorged veins: the veins also had become inflamed; and both had subsequently become atrophied, by the contraction of the cacoplastic lymph which had been effused. The albuminous condition of the urine, and other symptoms originally caused by mere congestion, were kept up by this state passing into inflammation, and thus rendering permanent that which was at first, as regarded the veins, mere obstruction from congestion with blood, and as regarded the tubuli, obstruction from pressure on their walls by the enlarged veins, and internal choking with epithelium. In granular disease of the kidney, that treatment which relieves renal congestion palliates the symptoms and diminishes the amount of albuminuria; and the sudden but brief amendment, with diminished albuminuria, which occurred in the case of my patient on the 30th December, must be ascribed to the bursting of the abscess having relieved the surrounding congestion, previously excited and kept up by its pressure.

It is to be regretted, that albuminous urine is still so much spoken of as specially diagnostic of renal *disease*, as it leads to errors in practice. The opinion of Dr. C. J. B. Williams is undoubtedly correct—that *per se*, albuminuria indicates nothing more than *congested* kidney. The facts already stated establish the correctness of this view.

In the treatment of patients emerging from scarlet fever, and even of those in an advanced stage of convalescence, or apparently quite recovered, it is most important to remember, that, from remaining debility, or, more generally, from this cause in conjunction with obstruction of the tubes from excessive desquamation, slight chills are apt to cause hyperæmia of the kidneys, which, when neglected, may originate a formidable, and even fatal, train of symptoms. Diuretics are seldom safe in such cases; though sometimes spiritus ætherus nitrici may be given. Besides the remedial means already referred to, it is important to order as adjuvants, (or as prophylactics), the clothing of the entire body in flannel, the use of mild but nutritious diet, and the scrupulous avoidance of exposure to chills, to wet, or to currents of cold air—not only until desquamation from the skin and tubuli uriniferi have ceased, but till the patient has regained his wonted tone. Scrofulous children recovering from scarlatina, require special watching; for even when they have had the disease so mildly as to be scarcely perceived, they seldom escape without dropsy of more or less intensity. There is a great proneness to renal congestion in scrofulous

children, even when little out of their usual degree of health; this is evidenced by the frequency of albuminuria in them. I have repeatedly found the urine albuminous in the febrile attacks of strumous children; and in a case of tabes mesenterica, with dropsy, which I lately cured, (by steady mild purging, cod-liver oil, and syrup of the iodide of iron), the urine at the commencement of the treatment was intensely coagulable by heat and nitric acid. In the diseases of children of scrofulous taint, (especially when the skin is harsh and scaly), the urine ought always to be tested for albumen; and, in a large number of cases, it will be found to contain it, but will often cease to do so, on the exhibition of a smart purgative. Dangerous cerebral diseases may thus be very often averted.

London Journal of Medicine, May, 1849, p. 451.

169.—ON THE DYSENTERY LATELY EPIDEMIC IN DUBLIN.—By Doctor R. Mayne, Physician to the South Dublin Union Workhouse.

[This epidemic appeared in two forms. In one, which Dr. Mayne terms the *acute* variety, the disease, though if neglected or mismanaged it became chronic or terminated fatally, yet, at the first, yielded readily to active treatment: while the second variety, which he terms *chronic*, was from the first complicated and unmanageable, and generally ended in death. In the present paper, Dr Mayne treats only of the *acute* dysentery. Speaking of *its pathology*, he says:]

In all *post mortem* eminations of those who died within three weeks from the commencement of the disorder, the large intestine was found the principal seat of the organic mischief, and in the majority of such cases it was the only part engaged. The morbid appearances generally extended from one end to the other of this portion of the intestinal tract; but it may be stated as a general rule, to which I do not recollect a single exception, that the lower parts of the canal were those most intensely effected, and that the structural changes became gradually less and less apparent as they were traced upwards towards the cæcum. An undue degree of vascularity of the peritonæum covering the diseased portions of the canal was generally observed, and the absorbent glands along the large intestines usually attracted attention from their extreme congestion; these bodies, which are of a pale colour and significant size when healthy, were, in almost every instance, enlarged, and of a dark claret hue. The walls of the diseased intestine were always enormously thickened and indurated; grasped between the fingers the part felt semi-cartilaginous, and to the scissors it offered an undue degree of resistance, cutting like brawn. The cavity of the intestine was found almost invariably contracted. In no instance were scybala present, and rarely were any traces of true fæces discovered, the contents of the lower bowels being similar to the matters last evacuated during life.

The mucous coat presented the most remarkable alterations in structure; in colour it exhibited every variety of shade, from the most intense vermilion to dark green and purple; in the rectum the green or purple hue of gangrene often predominated, but in the upper portions of the colon and in the cæcum a more florid vascularity for the most part prevailed.

In certain cases, which had run a very rapid course, the entire free surface of the mucous membrane, from the cæcum to the anus, was covered with a thick branny exudation, of an olive or dark brown colour, and presenting a striking resemblance to the cutaneous disease ichthyosis, or the material called shagreen; by scraping this with the blade of a scalpel it was easy to detach it from the subjacent membrane, which then appeared red, tender, and superficially ulcerated.

In other instances, where the disease proved less rapidly fatal, the mucous membrane exhibited various forms of ulceration; sometimes the ulcers

were solitary, with indurated bases and elevated irregular margins, not unlike the Hunterian chancre; these were always most numerous in the rectum and sigmoid flexure of the colon, and became fewer and fewer as the cæcum was approached; sometimes the mucous membrane over a great extent of surface appeared raw and velvety, with varying shades of vascularity, and, on close examination, it was found superficially ulcerated; whilst in a third variety the ulcers were large, irregular, ragged, and had deeply eroded the walls of the gut. In a vast number of cases these ulcers had penetrated fairly to the serous coat, but in no instance did perforation actually occur.

In the acute dysentery the small intestine was usually found healthy, the ileo-cæcal valve forming a line of demarcation to the disease: but in a few instances the ileum and the jejunum were both implicated, the mucous membrane of those intestines being excessively congested, although never actually ulcerated. Here also, just as in the large intestine, the disease seemed to decrease gradually from below upwards. The liver was sometimes extremely congested, and poured out dark venous blood in excessive quantities when incised; but this condition of the liver was certainly not essential to the disease for it was very frequently absent. The gall-bladder was always moderately distended with thin orange-coloured bile. The spleen and pancreas, the thoracic viscera, and the brain, were ordinarily healthy.

It is unnecessary to detail the symptoms of acute dysentery as they are too well known to require more than a passing notice, and during the late epidemic they presented nothing peculiar. Fever was always present, but it resembled the constitutional disturbance produced by a severe local disease, rather than any of the ordinary forms of continued fever. The disease, in almost every instance, commenced by a bowel attack, *not preceded* by fever, and the pyrexial symptoms which followed increased or diminished in proportion to the success or the failure of the remedies exhibited to subdue the local inflammation; in a word, the accompanying fever appeared to be the constitutional expression of local suffering, and not the more complex derangement of the system entitled continued fever.

In making this statement I do not mean to assert that during the recent visitations dysentery and typhus never co-existed; in a certain number of cases dysentery occurred as a sequela of fever, and in a few it seemed to arise during the progress of fever; but there was no necessary connexion between the two diseases, and when they happened to attack the same individual, the complication appeared to be purely accidental.

The dejections presented very different appearances in different cases: in some they consisted almost exclusively of shreddy mucus intermixed with blood, and without a trace of fæcal matters; in others the sanguineous discharge seemed to predominate, large quantities of fluid blood passing in every stool; in a third class of patients a tremulous, gelatinous-looking substance, ropy, tenacious, and tinged with blood, form the greater part of the evacuations, and, like the secretion from the bladder in chronic cystitis, it also frequently adhered to the bottom of the vessel; in a fourth a greenish semi-fluid material, like spinach, appeared the principal ingredient; whilst in a very large proportion the stools, from the very commencement, exhibited neither blood, lymph, nor mucus, but assumed at once the oohry appearance so common in chronic dysentery.

The treatment which proved most successful may be summed up in a few words: dissection showed that the disease consisted essentially in a severe inflammation of the large intestine, tending rapidly to ulceration, and sometimes even producing the death of the structures implicated; and, true to its pathology, it usually yielded to mercury and other antiphlogistic measures, *when this line of treatment was employed sufficiently early.*

Venesection was practiced with the best results whenever the patient was young and vigorous, and came under treatment in good time, but in a

vast majority of the workhouse cases *local* detraction of blood was the only mode of depletion practicable: this was best effected by leeching the verge of the anus repeatedly, greater relief being obtained from twelve leeches so applied than from triple the number placed upon the abdomen; the hemorrhoidal veins were in this manner most effectually unloaded, and at the same time the distressing tormina and tenesmus were with great certainty mitigated.

Mercury, however, must be considered the principal remedy. At this conclusion both my colleague, Mr. Shannon, and myself, had arrived early in the epidemic, and in it we were confirmed by the subsequent experience of the assistant physicians, Dr. Kennedy and Dr. Richardson. As in other acute inflammations, the good effects of the mercurial treatment are sometimes first perceived simultaneously with its action upon the gums, but very constantly it produces a cure before any symptoms of salivation arise; so that a daily inspection of the evacuations alone enables the physician to determine when the remedy ought to be discontinued.

The beneficial influence of the mercury is first recognized by the appearance of true fæcal matter in quantity in the stools, accompanied by marked relief to the general uneasiness, and a decided decrease of the dysenteric discharges. As soon as the natural secretions are fairly restored, the mercurial treatment may be safely laid aside, irrespective of the condition of the mouth.

Next to mercury, alkaline medicnes appeared to exert the most beneficial influence in acute dysentery. Unaided by mercury, their power to control the disease is but feeble, nor ought they ever to be depended upon, as a substitute for mercury, when the complaint is recent and the patient's constitution healthy; but when the evacuations have assumed a healthy color, under the influence of mercury, the stools still continuing too frequent and too fluid; or when mercury has fairly affected the mouth, without improving the stools, or materially alleviating the distress; or when the constitution is too feeble, or the dysentery too chronic, to afford a reasonable expectation of success from the employment of mercury, the most remarkable benefit is sometimes obtained from this class of remedies.

[Astringents were found only to aggravate the disease; so likewise did full doses of opium. Smaller doses of opium, especially in the form of Dover's powder combined with the mercury, seemed to relieve pain without exercising any injurious influence. When the active symptoms had subsided, there was often a tendency to sycbalous stools: under these circumstances the most effectual remedy was a draught containing one drachm of castor oil with twenty drops of oil of turpentine, given every three or four hours till the bowels were unloaded. With these were also combined astringent injections containing acetate of lead. When a relapse occurred, oil of turpentine was the most powerful remedy.]

Dublin Quarterly Journal, May, 1849, p. 197.

190.—CASE OF SEVERE CHRONIC SCIATICA CURED BY THE ACTUAL CAUTERY.—By M. Robert.

A woman from the country, aged 50 years, of good constitution and naturally portly, had been tortured during the last fifteen months with severe sciatic pains in the right limbs as low down as the foot. These pains were so insupportable each night, that she was obliged to get up and walk about the room. During the day her sufferings abated a little. Various remedies had been used without success, especially blisters frequently repeated. On examination no change could be detected in the normal physical condition of the limb; the patient had become thin in consequence of the sleepless nights she had passed. M. Robert had her put under the influence of chloroform, and with a red hot iron made a good stripe along the outer part of

the dorsal aspect of the foot, precisely in the direction of a line drawn from the external malleolus to the third and fourth toes. As soon as the patient came to herself she declared that the pain had completely left her. The following night she was perfectly calm and able to sleep for the first time; the pain has not returned at all since, and were it not for the suppurating wound upon the foot she might quit the hospital in a few days.

To-day, (fifteen days since the operation,) the cure of the sciatica has undergone no alteration, and she complains only of a slight smarting in the artificial wound. She will soon be able to leave the hospital, perfectly cured. This case ought to be added to the number of other parallel cases which we have previously reported as occurring in the practice of M. Robert. The treatment was first adopted by an Italian surgeon, Petrini, who practised for many years at Naples under the name of Cotugno, and being of great efficacy, is deserving the attention of practitioners.—*Annales de Therapeutique*, Mars. *Prov. Med. and Sur. Jour. May* 16, 1849, *p.* 276.

191.—CASE OF OBSTINATE NEURALGIA.—By — Wing, Esq.

[At a recent meeting of the Westminster Medical Society, Mr. Wing related the case of a gentleman æt. 42, of literary pursuits, who came under his care in February last; having suffered for more than twelve months from severe neuralgia, implicating chiefly portiodura, the sub-occipital, and branches of the fifth. Mr. Wing says:]

At this time he was completely shattered; the mind was evidently losing its power, memory was failing, and he was sinking under the apprehension of a speedy dissolution. His pulse was fifty-four, and labouring; tongue coated with yellow; skin natural; urine plentiful, sometimes thick; bowels generally regular; appetite defective; countenance sallow and anxious. He could not sleep. For twenty years before he had been subject to a peculiar compressive pain in the head on the approach of thunder. The thoracic and abdominal viscera were healthy. Counter-irritants were applied behind the ear, and the following ointment applied over the affected parts night and morning:—veratria, thirty-six grains; spermaceti ointment, half an ounce: this application, though it produced no eruption, gave immediate relief to the nose and forehead. A purgative of calomel, jalap, and ginger was administered, which acted freely; and seeing that the affection was not one of periodicity, and looking at the languid state of the circulation, Mr. Wing ordered him a draught containing the ammoniated tincture of valerian, the aromatic confection and peppermint water, three times a day. A nutritious diet, with wine, and subsequently bitter ale, was enjoined. Ten days' perseverance in this plan of treatment produced such an amendment that he slept well; his appetite improved, and altogether he was much better. In a month he was in perfect health, and able to resume his usual duties. He continued his ale, and used a shower-bath daily; no mercury was given beyond the dose of calomel. Mr. Wing regarded the case as interesting, from the following facts:—1. The speedy relief afforded by the counter-irritants, even in a case of so protracted a nature. 2. The beneficial effects of diffusible stimulants, combined with a cordial, and the utter uselessness of quinine, though largely administered. 3. The rapidity with which amendment, both in body and mind, took place, on the relief of the agonizing pain to which he had been so long subjected.

Medical Gazette, May 18, 1849, *p.* 872.

192.—ON THE PRACTICE OF "DEBRIDEMENT."—By Dr. C. Shrimpton.

The question, as it now stands in Paris, may be rendered thus:—Should large incisions be made to divide the aponeurotic membranes as a preventive means immediately on the receipt of a gunshot wound, or not? To

which every scientific man is ready to answer almost in the very terms left us by our own Hunter. Larrey, the illustrious representative of French military surgery, and his son, the Baron, have, it is true, greatly recommended *debridement*, but this practice is not continued at the present day.

The potent antiphlogistic remedies, constant cold application, by means of ice or irrigations of cold water, so generally employed, have now completely superseded it.

In most cases, submitted to a proper treatment, the strangulation does not take place, and these large incisions may be avoided; but when the tumefaction does take place beneath the resisting membrane, it is time enough to open the aponeurosis and liberate the compressed tissues. It must be acknowledged, however, that in many cases these incisions, although very extensive, do not procure the relief expected; for how often does it happen that the soft parts protrude through the opening of the fibrous membrane, and form a kind of muscular hernia! This consideration has deterred many surgeons of great celebrity and skill from having recourse to them even in the most marked cases, and their prudence has been verified by the happy results of an appropriate and energetic antiphlogistic treatment. The immense disadvantage of these large incisions cannot be contested, and when neglected too long the most serious accidents are the result.

The question at issue, whether these incisions (*debridements*) should be practised as a preventive means or not, is of great importance, and certainly is not adopted by either the civil or military surgeons in France. When the author of the article alluded to in the Lancet of the 9th, asks, "Whether the advanced stage of cure in which a large majority of M. Jobert's cases were, when the operation of *debridement* had been practised, could be considered as wholly due to this method of treatment?" it is evident there must be some confusion, for it is very certain that when cases have reached an advanced stage of cure they no onger require any incisions; but if the use of the bistoury should become necessary after a certain period, the incisions can then no longer be considered as *debridements*, but simply as the means of facilitating the exit of accumulated pus.

Lancet, Feb. 24, 1849, p. 207.

193.—ON THE USE OF ELECTRO-GALVANISM.—By E. W. Tuson, Esq., F.R.S.

Electro-galvanism may be considered as a stimulant to the nervous system, a stimulant to the most minute fibrillæ, to the most delicate nervous texture, and likewise to the neurilema, or sheath of the nerves, promoting speedy absorption, so that, should the sheath, or even investing membrane of any nervous fibre be thickened or enlarged by extravasation, or any other means, by stimulating the nerves, promoting absorption, and removing the obstruction, the part will assume a healthy action. Sometimes chronic inflammation, or even disease, becomes established through the want of nervous energy to restore a healthy function so as to bring the different tissues composing membranes, or even other portions of the frame, to a normal state and to a proper degree of healthy action. Such may be the condition of the parts after a sprain: the ligaments have been lacerated, the synovial membrane injured, the tendons and their thin sheaths more or less bruised, the cellular tissue distended by extravasation; and it requires a large, or an increased action of the nervous power to restore these several parts to their former condition; but, should the joints so sprained be previously in a weakened state, a larger quantity of nervous power still will be required to bring about a cure.

We have, then, an agent in electro-galvanism, to act upon the nervous system, to excite its action, to restore it to a proper degree of energy, so as to accomdlish a cure. In rheumatism, electro-galvanism will often prove

of the greatest benefit; but in such cases the remedy should not only be applied to the trunks of the nerves themselves, but to their more minute fibrillæ that are distributed to the surface of the skin, by which means the membranous tissue is more stimulated by the current passing through the several parts, from the one side to the other; and by such means the sparks may be made to pervade through the centre of the joints, and also to its investing tissues, which will afford relief by producing absorption.

Electro-galvanism is an agent which produces absorption quicker than any medical means that we are acquainted with; and this can be clearly proved by its application to indolent tumours, as it very frequently cause them to be absorbed most readily. After other means have failed, electro-galvanism will completely cure some indolent tumours. A lady residing near Harrow applied to me on account of an indolent swelling, situated beneath the under part of the right side of the lower jaw. The tumour occupied the space between the side of the inferior maxillary bone and os hyoides; all the usual means were employed for the absorption of the swelling, but without success. The electro-galvanic spark was then applied about once in a week, or once in ten days, on account of the distance she resided in the country. In the course of a short time the tumour began to diminish, and ultimately she was quite cured. Many tumours have been dispersed by the aid of this agent; but it may be here mentioned, that more success has attended its application after medicinal means have been previously employed. In fatty tumours no benefit has been observed to occur from its use; but, in glandular swelling, experience has proved to me that it may be of the greatest service; and it is an agent that can be made to enter the most distant parts, or deep-seated swellings, and one that ought to be fairly tried.

Mr. Abernethy, in his lectures, used to make the following observations, which are applicable here:—"Electricity is a part of surgical practice that may be considered as *unique*. All other means operate on the surface; but electricity will pervade the very centre of the body. It may be so managed as to be made to pervade a tumour, even in the centre of the abdomen. It is a species of stimulation, and may be applied in various degrees of force. Much disputation has been raised as to the manner in which electricity operates on the nervous energy, but I speak of it as a stimulant operating on a local disease. Now as to its application, you must modify it according to the tenderness of the part; if you stimulate the part too much, you will produce inflammation, and the tumour will increase. Now electrify one swelling, and the swelling subsides; electrify another, and it will increase. What can we think of it? and think we must. We must consider that it acts as a stimulant, and increases the action of a part. You should begin with very small charges of electricity. You would like the patient to feel it a little; but, if he managed so as to produce a feeling of warmth and tingling in the part, and let that feeling subside, if you saw that it did not increase the action too much, then touch it up again, and you might increase the force of the charge. I have very frequently heard people say, if you speak to them of electricity, 'Oh, I do not think it ever does any good; I have given it a very fair trial; I was electrified every other day for two months.' All this is very possible; and they might have been electrified for two years without any benefit, unless there be some precise mode adopted for its employment, and the effect it produces be regarded. This is the worst thing that can be done; it is this practising without intellect that constitutes empiricism; it is blindly adopting, in this way, a power without a principle to guide it, that I abhor above all things." The remembrance of these observations has induced me to employ electricity, and now electro-galvanism, in a number of cases of tumours with the greatest and most beneficial results. Electro-galvanism is far superior to electricity for many reasons, and much more calculated for surgical purposes. The force of the sparks can be so regulated that the stimulating effect should not be too

great, by which means its employment becomes safe, and can be productive of no ill consequences, even if it should prove of no service. It becomes, therefore, an agent of great practical utility in judicious hands, and under a variety of circumstances can be employed with the utmost benefit. Its effects in promoting absorption have already been mentioned; and in cases of obstinate stricture, it has been employed with much advantage, producing more speedy relief than any other means that we can use in our surgical treatment. Not only do these observations hold good in stricture of the urethra, but also in some severe cases of stricture of the rectum. I might here detail the method of employing this agent; but I am always most willing to enter into a personal explanation with any of my profession, upon this or any other subject that will benefit or promote science.

Indolent ulcers, and even scrofulous sores, frequently result from the want of a proper nervous energy in the part; a want of tone in the nerves to produce a power sufficient to cause them to heal and promote a healthy action. We know that scrofula is a peculiar action affecting the lymphatic vessels and their glands; these parts are the immediate seat of this complaint; but let us look deeper into the cause, and I firmly believe we may trace it to the nervous system: if so, have we not it in our power to benefit such cases by electro-galvanism? My experience warrants this opinion, and my observations clearly lead me to believe, that great and permanent benefit may result in a number of hopeless cases that are in this great metropolis. Ulcers may have a modified current passed through their whole surface, even if ever so extensive; and medicinal agents may, if necessary, be employed by the same means, which will produce the utmost benefit.

By the aid of electricity we have been able to decompose a solution of sulphate of copper and to restore it to its primitave metallic state; we see this in the electrotype, and I look forward to a period when we shall, by similar means, be able to produce some greater and even more advantageous results upon the human frame, bestowing permanent and lasting benefit upon the afflicted sufferer.

In cases where it becomes advisable to stimulate the more minute fibrillæ of nervous filaments which are distributed upon the surface of the skin, arising from the main trunks of nerves connected with the deeper seated branches of a part, it cannot be accomplished with much advantage. In cases of obstruction to the performance of any natural function, electro-galvanism will be most serviceable in stimulating the nervous action, and thus restoring the organ to a state of health. Medicinal agents do much in the treatment of disease; but electro-galvanism will do more, and produce a more decided result, and a much more permanent advantage may be looked forward to from its proper application.

In cases of sciatica, after blisters, colchicum, morphia, warm baths, acupuncturation, and where all the usual remedies have failed to give relief, electro-galvanism may be safely recommended with every chance of success; benefit will be felt even after the first or second application; and the patient will solicit a repetition of this agent as affording the greatest relief.

Medical Times, March 10, 1849, *p.* 377.

194.—ON COPALCHI BARK; A NEW BITTER.—By Dr. James Stark.

[*Copalchi* is the Indian name of the bark of a tree growing in Chili and Mexico, and which appears to be the *croton suberosum* of Humboldt and Bonpland, and the *c. cascarilla* of Professor Don. It is an agreeable aromatic bitter, yielding its properties to water or proof-spirit. Dr. Stark says,]

Since I received the first samples of copalchi bark, I have made trial of it in a few cases, which seemed tolerably well fitted for testing its properties, if it possessed any.

The first case was one of atony of the stomach and bowels, with weak

and imperfect digestion, and irregular action of the bowels, at one time costiveness, at another slight diarrhœa existing. In this case, the usual bitters as gentian, quassia, and calombo disagreed, exciting nausea, &c., while Peruvian bark and quinine increased the headach, and induced a feverish state of the system. The case, however, wonderfully improved under the use of the simple infusion of the Copalchi, of the strength of half an ounce of bark to the pint of boiling water, given in table-spoonful doses three times daily.

In the second case in which trial was made of copalchi bark, the patient suffered from irregularity of the bowels, but with this peculiarity several instances of which came under my notice during the past winter during the prevalence of the cholera), that twice daily, viz., at three o'clock afternoon, and three o'clock morning, more or less violent spasdomic cramp in the bowels came on preceded by shivering and coldness, and terminating by a sweating stage. Quinine in 1½ grain doses twice daily, had been given for two days, with the effect of completely checking these intermittent paroxysms, when it was obliged to be stopped, in consequence of its inducing violent headaches, flushings of face, and feverishness. The paroxysms immediately returned as before, but on substituting infusion of copalchi, giving a wine glassful at two o'clock afternoon, and the same quantity at bed-time, the paroxysms were arrested and have not since returned.

Like relief followed in another and milder case of the same nature. In this case, the cure was trusted entirely to the copalchi, no other medicine being given, in order to see whether it really possessed any antiperiodic powers. It is therefore scarcely possible to doubt that it possesses some antiperiodic virtue, so that we can easily believe what is stated of its powers by the Mexican and Peruvian physicians in arresting the paroxysms of intermitting fevers.

It appears to me, that one of the great wants in the medical practice of the present day, is a good light bitter of some real therapeutic powers. Most of the bitters in common use are harsh, disagreeable, and heavy, often exciting nausea, aggravating rather than allaying the irritability of a stomach already too irritable. To avoid these it has become of late too much the practice to employ quinine, bebeerine, strychnine, or other concentrated bitters or alkaloids, which in many cases do more harm than good. Satisfied I am of this, that in dyspeptic cases especially, by employing the alkaloid or bitter principle, separated from the aromatic, resinous, or other principles with which they are usually associated, we destroy to a great extent the therapeutic powers of the drug, and fail to derive those benefits which we should receive from making use of a spirituous extract, a tincture, or even a simple infusion or decoction of the drug. The warm aromatic principles associated with the powerful bitter in the copalchi, seems to me to supply the want of a light bitter, which most practitioners must have experienced; and it is to be hoped, that it will succeed in the hands of others as much as it has done in mine.

It may be remarked, that the infusion and decoction of copalchi are best made of the strength of half an ounce of bark to one pint of water. The tincture, with one ounce of bark to one ounce of proof-spirit. The dose of the infusion and decoction is a table-spoonful or small wine glassful twice or thrice daily. Of the tincture one or two teaspoonfuls, or of the extract from one to two grains twice or thrice daily.

Edin. Med. and Surg. Journal, April 1849. *p.* 410.

195.—ON THE ACTION OF ASTRINGENT MEDICINES.—By Dr. A. B. Garrod.

A certain class of substances having the power of arresting hemorrhages inordinate fluxes, &c. are so named, amongst the most powerful of which, alluding only to those which act, not on the parts to which they are ap-

plied, but by absorption, and hence on remote portions of the frame are gallic and tannic acids, or the vegetable production containing them, preparations of lead, alumina, and persalts of iron.

How do these remedies act? As they produce, likewise, an action on dead animal textures, it would seem that a similar effect takes place when they are applied to the living tissues, and that they act by imparting to the blood their own peculiar properties, hence enabling it to re-act on the capillary system of vessels. With regard to the action of tannic and gallic acids, I may remark, that during extensive trials of these two agents in cases of hemorrhage, especially in menorrhagia and hæmopytsis, I have always found the latter to be by far the most effectual; and the cause of this is readily explained by the recent experiments by Wohler and Frerichs on the changes which tannic acid undergoes when taken into the animal economy, for they have shown that this acid does not pass through the system entire, but becomes converted into gallic and pyrogallic acids, and a humus-like substance; and, therefore, a given quantity of the tannic must be inferior to the same weight of gallic, as probably it is the latter acid only which acts as the astringent body. I had also observed, in my trials of these remedies, that constipation was much more constantly induced by tannic than by gallic acid, and Wohler and Frerichs remark that in dogs the stools gradually ceased when large quantities of tannic acid were administered. Tannic acid appears to act most powerfully as a local astringent, gallic acid more effectually as a remote one. Some of the mineral acids, especially the sulphuric, seem to be astringent on the same principle, so likewise the salts of silver, zinc, &c.; but many of the remedies belonging to this class act in other ways than as astringents. *Lancet, Dec. 30, 1848, p. 709.*

196.—ON A NEW SALT; BISULPATE OF IRON AND ALUMINA.—By Sir JAMES MURRAY.

[This new salt of iron and alumina is stated to be a valuable vermifuge, and an excellent application to foul and flabby ulcers, sore or relaxed throats, bleeding mucous surfaces, &c. It is thus prepared:]

When ten parts of well washed alumina, three of soft iron filings, and five of carbonate of soda or potass, are compressed by fixed air for a considerable time in distilled water, a clear carbonated solution is obtained. But when the pressure is removed, and the consolidation of the carbonic acid ceases, the solution no longer remains clear or permanent. When the fluid, however, is treated with sulphuric acid in excess, a *bi-sulphate* results, in the crystals of which the iron is permanently safe from rusting or peroxidating in the air, or even when dissolved, as is the case with other salts, or preparations of that metal. When used as an *internal tonic* or *astringent*, the iron of this salt does not irritate; when applied as a lotion, it does not rust or stain the linen.

Great care must be taken not to confound this new saline remedy with a salt called by writers "*iron alum.*" This latter salt contains no alumina at all. It only resembles alum crystals. In that "*iron alum*" the iron is in the state of *peroxide*, which is not magnetic, and is besides an irritating and exciting ingredient, whereas, on the contrary, this new medicinal salt contains only pure *protoxide* of iron, which is *magnetic*, and acts as a sedative rather than an excitant.

This new salt is also entirely different from a "*sulphate of alumina and iron*," mentioned in some chemical works. That salt is neutral. Its crystals are of a needle-like form, and it is not suitable to medicinal purposes. But in this preparation, the acid is in excess, and the aluminous astringency is combined with the styptic quality of the iron in such proportion as is best adapted to shorten relaxed animal membranes, to corrugate flabby fibre, and even to constringe the submucous tissues when so weak as to lose their contractile properties. This quality of rendering mucous coats more firm

is very desirable, when, like the cords of an instrument, they lost the due degree of tension necessary to their harmony of action.

That some corrugation of the mucous membranes greatly contributes to diminish undue sensibility may be observed in many instances. Among others, obstinate vomiting soon ceased where this styptic salt was administered, so as to constringe the interior coats of the stomach. Observe how a topical corrugation, even of the true skin, deprives it of feeling. The hand of a builder loses its sensibility where fresh mortar touches the cuticle. The interior coat covering the stomach of a horse is so insensible that no emetic will act upon it.

A proper solution of this salt not only abates the sensibility of interior tunics, but also of tender *tumours* and *inflamed glands*. It exerts a pressure upon them by contracting the integuments, and thereby diminishing the calibre of the vessels, and lessening the diameter of the swellings or local congestions. Analogy, derived from the almost specific powers of alum itself in painters' colic, led me to use this improvement of aluminous properties in other intestinal disorders attended by cramps or spasms. It is admirable in *pyrosis* and old fluxes, attended with much pain.

I had no opportunities in Dublin of comparing the value of this salt in Asiatic cholera, but many reasons lead me to expect benefit from it, at least during the *premonitory stages, if there be much looseness of the bowels*— Healthy blood contains iron, but when the atonic relations of that fluid are broken, iron is precipitated, and its magnetic properties are extinguished in the circulation. I contrived this salt in order to afford a *tonic quality* for discharges accompanied with debility, and to fulfil my favourite wish of having a persistent salt of the black oxide of iron that does not run readily into rust.

The absorption of an enduring protoxide of iron into the system renders it capable of that *magnetic energy* on which, I think, a good deal of *vital action* depends. It also encourages a more free *inspiration of air, in order to furnish oxygen to the iron during its transit or decomposition in the circulation*. Whether these notions be right or not, the use of this new saline remedy has told well in many instances. I hope it will be used in the diarrhœa of cholera.

The new salt is very soluble in any cordial or aromatic water. I give it in doses of five or ten grains every two or three hours, till its effects succeed. In order to stay the bowels, in wasting looseness, during cholera, it might be repeated much oftener. The iron is not a stimulant in this salt, but rather calms whilst it sustains. The aluminous quality abates tormina and soothes the mucous membranes. Even alum itself diminishes pain, and does not increase or induce paralysis of the intestines, as salts of lead are sure to do when long continued.

Dublin Medical Press, March, 14, 1849, *p.* 162.

197.—OBSERVATIONS ON THE USE OF ALUM.—By Sir James Murray.

[Sir James Murray thinks that the undoubtedly useful effects of alum as a remedy have been generally in a greater measure neutralized by the state in which it has been employed, i.e., in solution in water, or in astringent infusions or decoctions which it precipitates. He says]

To obviate these mal-administrations, I have long been in the habit of prescribing *alum* in substance, but in such state as to prevent its too sudden action on the tender tissue. I always order this medicine to be reduced to an *impalpable powder*, and to be mixed in molasses, as an electuary. In this way, the remedy comes by slow gradations to constringe the relaxed fibres, and does not display all its action at once, like the ordinary solutions; nor does it irritate the tunics or excite the bowels like *alum* in powder. No

doubt, part of the properties of alum is owing to its supersaturation with sulphuric acid, but it is also a very desirable improvement to present this acid to the delicate and tender parts affected, in such a manner that its action shall not be too suddenly unfolded, but that the remedial effects may be displayed little by little, until the fibres acquire consistency and natural tone.

At this time when it is a desideratum to suggest every possible method of maintaining a healthy and tonic condition of the alimentary canal, by way of precaution againt common or spasmodic cholera, I wish to mention that alum, when given in the state of electuary, in doses of about ten or twelve grains, three or four times daily, seldom, if ever, failed to cure that obstinate disease, which I elsewhere described as *catarrh of the stomach*. I will only give a short abstract of one case out of many others. The recipe, of which I hold a copy in my hand, was given by me to a lady twelve years since; she now resides in Clontarf crescent, and continues well since that time.

Formerly, she vomited daily a great quantity of glairy viscid mucus. I have seen basons of it so viscid as to resemble the spawn of frogs. The lady suffered many years, whilst no remedy succeeded. The ropy mucus brought up was so albuminous, that reflecting upon the action of acidulous alum on albumen itself, I determined to give alum a fair trial. She had the electuary well made up by the late respected Mr. Kennedy, of Capel street, on the 30th October, 1837. His successor sent me this copy of the recipe, and I now produce it in case any member may desire to use its proportions.

In this case, it was necessary to prevent constipation, and therefore an equal quantity of impalpable super-tartrate of potass was combined with the alum, and also a little ginger, to obviate flatulence. This combination was most successful in this and many other cases, both of catarrh of the stomach and also of the bladder, and other mucous cavities. Whether it may aid in preventing relaxation of the bowels, antecedent to cholera, it is probable there may be opportunities enough to determine.

There is another method of using alum, as a *gargle*, which far surpasses the usual applications. All gargles are hitherto taken into the mouth, and reverberated against the palate, but I found that alum, blended into an impalpable paste with honey or molasses, and then diluted with distilled water, forms an invaluable gargle, not only as a constringing lotion, diminishing the diameter of enlarged vessels, but also constricting turgid and relaxed glands and tunics. I was led to this practice many years since by noticing the inefficacy of any gargle used in the common way. So far back as the year 1816, I pointed out in the Edinburgh Medical and Surgical Journal the inutility of ordinary gargles used in the common manner. After that time, I noticed that by drawing the gargle here recommended into the throat, not through the mouth, but through one or both nostrils, the progress of cure was remarkable. There are untoward secretions of mucus, and sometimes an injected, relaxed, and turgid state of the coat and vessels of the back nasal passages: these troublesome conditions extend down the fauces, and cause sore throats, with inflamed appearances over the glands and entire surfaces. These cannot be removed by gargles applied through the mouth, but if appropriate applications of alum, honey, and rose water, be drawn into the palate through the *nose*, the *source* of the irritation is healed, and the continuous surfaces soon partake of the same salutary influence.

[Speaking of painters' colic,]

Sir James Murray said he had employed the remedy very largely in that affection; but with this qualification, that he gave it in larger quantities than in other complaints—viz., in doses of fifteen grains every two hours; and though it acted very strongly as a purgative in some cases, owing to the large quantity of sulphuric acid contained in it, he found its administra-

tion to be most successful. With respect to the *modus operandi* of alum in such cases, he was of opinion that in the first instance it probably acted by reducing the carbonate of lead to a sulphate. Sir James Murray then proceeds to call attention to the well-known fact, that the water in leaden cisterns may become poisonous when the water is pure, but that where it contains any sulphates, it never is found to be injurious,—as giving some degree of probability to the view he took of the manner in which alum acted as a remedy in cases of painters' colic.

Dublin Medical Press, Jan. 24, 1849, p. 58.

198.—A NEW ALKALOID IN CINCHONA.

M. Winckler has detected, in some cinchona, closely resembling that of huamilies, the presence of a new alkaloid, *quinidine*, which crystallizes in a form similar to amygdaline. The crystals under the microscope are rhomboidal: they are very hard. Quinidine is more soluble in alcohol than cinchonine, less so than quinine, but almost insoluble in water. Sulphate of quinidine is not easily distinguished from sulphate of quinine, from which it differs only in the greater facility with which ammonia precipitates cinchonine from its solution. When sulphate of quinidine exists in sulphate of quinine, it may be separated by carbonate of soda. Quinidine is soluble in alcohol of sp. gr. 0·863.—*Jour. de Phar.*, Oct., 1848.

Medical Gazette, November 24, 1848, p. 807.

199.—ON THE USES OF COLLODION.

[The following abstract of the purposes for which collodion has been employed in surgery, is from a late number of the London Journal:]

1. In *wounds, ulcers, and other external lesions*, it has been employed with great success. In the American Journal of the Medical Sciences for April 1848, its discoverer, Mr. Maynard, of Boston, states that Dr. Whitney had employed it in the *removal of a wen from the head*. To obviate the occurence of erysipelas, from the presence of sutures, Dr. Whitney shaved the hair from the scalp, and by means of the cotton solution, glued some pieces of sheep-skin on each flap, at a short distance from the wound. These straps were then brought together, and retained in their position by sutures. The wound healed favourably; and pain, and the usual accidents arising from the presence and removal of sutures, were entirely obviated. Mr. Maynard also mentions that Dr. Comstock, of Wrentham, U. S., "has recently employed this liquid as a dressing, in a case of *extensive laceration of the perinæum*, with a success that, he thinks, never attended any other mode of management. The dressings remained firmly attached, and solid, during the process of healing, notwithstanding they were for a time almost constantly covered by urine mucus, and subject to being displaced by the motions of the patient."—The Monthly Journal of Medical Science for July 1848, contains a report of a paper "On Solutions of Gun-cotton, Gutta-percha, and Caoutchouc, as Dressing for Wounds," read by Dr. Simpson before the Medico-Chirurgical Society of Edinburgh. He had employed collodion, with perfect success, in some cases of *painful fissure at the base of the nipple*. Having brought together the edges of the wounds, he applied the collodion, which formed a protection against all irritating influences, and permitted the child to suck, without causing, as it previously did, pain to the mother, or disturbing the dressing. The healing process took place rapidly.—Mr. Erasmus Wilson (Lancet, November 18, 1848, p. 553), says, that in two instances of *chapped nipples*, in which he used it, it seemed to "work a charm upon the painful skin. The gaping cracks were instantly

drawn together, and almost obliterated, by the contracting power of the remedy; and were effectually shielded from the influence of moisture, and the pressure of the gums of the infant, in consequence of the rapid evaporation of the ether in an instant of time."—Dr. Simpson also mentions, in the above-cited communication, that, in a case where Professor Miller had *removed a portion of necrosed bone* from the lower jaw, he (Dr. S.) dressed the wound with collodion, with the effect of retaining its edges in apposition.—Mr. Brown made a communication in the Westminster Medical Society, December 3, 1848, stating that he had used collodion, with advantage, in cases of sore nipple.—(Lancet, Dec. 23, 1848). The British American Journal, for August, 1848, states that Dr. Payne, dentist, of Montreal, appears to have suggested the use of collodion in *burns;* and Dr. Crawford, of the same city, employed it in the case of a young gentleman who met with a severe burn of the face and hands. The burn was covered with a thin glazing, which completely excluded the air; and the pain almost immediately subsided. Its utility in burns has been confirmed by other practitioners.—In the Dublin Medical Press for October 4, 1848, Dr. T. R. Mitchell gives the result of his experience of the use of collodion in *ulceration of the os and cervix uteri*. He considers it greatly superior to nitrate of silver for forming an artificial covering to the ulcer, and permitting the healing process to go on underneath. The ulcerated surface being wiped clean and dry with soft lint, the solution is rapidly applied, with a camel's-hair pencil, and allowed to dry; a second, third, and fourth coating, if necessary, can then be applied. The first application is attended with a slight burning sensation, caused by the ether, followed by a sensation of coldness, from its evaporation. The application requires to be renewed at the end of forty-eight hours, as the mucus collects beneath the dressing, and raises it. In cases of simple abrasion, three dressings have proved sufficient; in more obstinate cases, he has applied caustics first, and then covered the eschar with collodion; thus curing extensive ulcers in half the time required by other methods. He has also found it beneficial in cases of *vaginitis* without ulceration.

In the Annales de Therapeutique for September and October 1848, p. 241, it is stated, that M. Jobert, of the Hopital St. Louis, and M. Robert, of the Hopital Beaujon, have successfully employed it as a *dressing for wounds made in operations*.—Dr. Yvonneau, jun., of Blois, communicated to the Union Medicale for November 18, 1848, the particulars of a case in which he had employed collodion, with an amount of success exceeding his expectations. The patient, a child of five years old, had *extensive fistulous ulceration of the right cheek*, permitting the escape of saliva, as well as of food and drink; the cheek had also contracted very firm adhesions with the gums of both jaws. After an ineffectual attempt to remedy the mischief, by a common mode of operation and dressing, he determined, as a last resource, to try the effect of collodion. Having obtained anæsthesia by means of chloroform, he carefully brought together the edges of the wounds, and retained them in their position by long and firmly agglutinated bandages, passing completely over the chin, upper lip, and *ali nasi*. Over the whole, he applied a layer of collodiom; which, besides its adhesive property, completely protected the dressings from the saliva and food, which had been the main causes of the failure of the former operation. At the end of three days, a slight displacement of the dressings rendered readjustment necessary, when the edges of the wound were found united to a considerable extent. On the eighth day, the dressings were again removed; when, in place of the enormous fistulous opening, only a small cicatrix was found, which at length almost disappeared. The collodion, in this case, appears to have been of service, not only in preventing the dressings from imbibing fluid from without, but also by preventing the escape of saliva, externally, through the wound. The healing process does not seem to have been retarded by its presence in the interior. M. Yvonneau is of opinion that col-

lodion might be advantageously used in the operation for *hair-lip*. He also states that he employed it in a case of *wound of the first joint of the thumb*, with disease of the ends of the bones, produced by the bite of an ass. Having performed resection of the diseased ends of the bones, he retained the thumb in an immoveable position, by means of linen bandages soaked in collodion. The result, however, he was unable to state, as the patient was still under treatment at the time of his making the communication.—In the Lancet for December 9, 1848, we find that Mr. Tucker, of Berners-street, had been successful in restraining severe *hemorrhage from leech-bites* by means of compresses of lint dipped in collodion, and applied to the bleeding orifices. Where oozing appeared, the solution was applied by means of a camel-hair pencil; it was also applied freely round the edges.—In the same journal, for January 6, 1849, Mr. R. T. Wylde recommends it in the hemorrhage from leech-bites.—Dr. W. H. Ranking, of Norwich (Lancet, January 13, 1849), says that he has caused it to be applied, with much advantage, to the *incisions after cupping*.—Dr. Muirhead, of Glasgow, (Lancet January 27,) says that he has seen great benefit arise from its use in *bed-sores*.

2 *Cutaneous Diseases*. — Mr. Erasmus Wilson has employed collodion with great benefit in these affections. In the Lancet of November 18, 1848, he describes the case of a young lady, who "had been suffering for many years with *scrofulous ulceration of the skin*, in various parts of the body." "She had been under my care," he says, "for several months, and the sores were much improved; but they were nevertheless very far from being healed. The diseased skin had the appearance of being worm-eaten, its hollows were filled with pus, which burrowed under the surface, and it way moreover thickened and congested. By the constitutional treatment which I had pursued, I had, to a great measure, corrected the pyogenic tendenon of her system; but I felt the want of a local remedy that would serve as as impermeable covering to the surface, in fact, take the place of the lost epidermis, and act the part of an artificial scarf-skin. I had tried vulcanized caoutchouc spread with adhesive plaster, gutta percha, nitrate of silver, astringent solutions, ointments, and pressure by bandages, in vain, the remedy was not as yet found." Having received some collodion from Messrs. Bell of Oxford-street, he determined on applying it, and "on the next visit of the patient, removed the dressings from the sores, and pencilled them over with the new agent, which covered the surface with a powerfully adhesive film, of about the thickness of gold-beaters' skin, and effectually represented the lost scarf-skin. A piece of dry, soft linen was the only additional covering required; and she left me, much delighted at the abandonment of the local applications and bandages. This young lady has since continued to apply the collodion herself night and morning, until the present time, when the sores are nearly well, and the congestion and scrofulous thickening of the skin almost gone." Mr. Wilson says further, "The diseases of the skin in which I have hitherto used the collodion with advantage are, *chronic erythema of the face; intertrigo; chapped nipples, and chapped hands; herpes labialis, preputialis*, and *zoster; lichen agrius; lupus non exedens* and *exedens; acne vulgaris;* and several *affections of the sebiparous organs*. In chronic erythema of the face, its contracting power was most usefully evinced, as it was also in lupus non exedens and acne. In a troublesome case of chapped hands and fingers, resulting from chronic lichen agrius, the collodion acted, not merely as a protective covering, but also promoted the healing of the cracks more quickly than the remedies I have been in the habit of employing. In four instances, it immediately put a stop to herpes labialis, and in a very severe attack, it showed itself to be a powerful and useful remedy. Small superficial ulcerations of the corona glandis and prepuce, caused by excoriation, were cured by a single application; and in a gentleman very susceptible of excoriation, it acted as a pro phylactic. From the success of the latter trial, I am induced to think tha

it might be usually employed as a prophylactic, in cases of exposure to syphilitic contagion."—In his paper in the Lancet, already quoted, Dr. W. H. Ranking says: "I have not had an opportunity of trying this preparation in *variola*, but I would suggest it as a valuable application to the face, &c. for the purpose of excluding air, and thus preventing pitting.

The same effect is produced by tincture of iodine, a solution of nitrate of silver, Vigo's plaster, mercurial ointment, &c., but it strikes me that collodion offers a peculiar ready mode of obviating deformity. I need not refer to the fact, that the development and maturation of the variolus corpuscle is in some way connected with the contact of air, as it is always more decidedly and abundantly formed on the face, hands, &c., and is more sparingly developed on the hairy scalp of the adult, while on the scalp of early infancy it makes the same progress as on the face.

3. *As a Stopping for Teeth.*—In the Lancet for 30th December, 1848, p. 729, Mr. J. Robinson, dentist, Gower street, states, that he has "frequently applied collodion in severe cases of *tooth-ache*, arising from exposure of the nerve, with perfect success, when no persuasion could induce the patient to submit to extraction." The method which he adopts is, to let the patient first wash the mouth with warm water, in which a few grains of bicarbonate of soda have been dissolved. He then removes from the cavity any foreign substance likely to cause irritation. After drying the cavity, he drops from a point the collodion, to which have been added a few grains of morphia, after which he fills the cavity with asbestos, and saturates with collodion. Lastly, over this, he places a pledget of bibulous paper. In a few seconds, the whole becomes solidified, and forms an excellent non-conductor of heat and cold to the exposed nerve. By occasionally renewing this, he has been enabled to effect a more durable stopping with gold leaf.

London Journal of Medicine, Feb. 1849, *p.* 197.

200.—ON COLLODION PROPERTIES.

Collodion, when properly prepared, is, at first, an opaline, adhesive fluid, smelling strongly of ether, and becoming perfectly transparent, by the deposit of a tenacious shreddy material, when at rest. When a layer of this is laid on any surface, a transparent coating is left, by the evaporation of the ether, which possesses, in a marked degree, the properties of *contractility* and *adhesion*, as well as *transparency*, *pliancy*, and *impermeability*. Dr. Bigelow says: "By its powerful contraction upon evaporation, it places the edges of the incised wound in much more intimate contact than is obtained by sutures and adhesive cloth; unites them, by equal pressure, throughout the whole extent of the wound, and maintains them immovably fixed." In this letter to the Lancet, already referred to, Mr. Erasmus Wilson points out its contractile property as producing a local pressure of considerable power, on the surface to which it is applied; and hence he considers it a valuable agent, in the treatment of congestions of external parts of the body. Mr. Maynard proved its strong adhesive powers by the following experiments: "A strap of sheep-skin, glued to the hand by a thin layer of the solution, nine inches long, and one and a half wide, sustained a weight of two pounds. A second strap, attached to the hand by a layer of the substance, nine inches in length, and three in width, sustained a weight of three pounds. A third strap, fixed to the hand by a layer of the liquid, twelve lines square, resisted the force of ten pounds without giving way; and a fourth strap of the leather, glued to the hand by a stratum of the solution, measuring one and three fourths of an inch in length, and one in width, was not separated from its attachment by the gravity of twenty pounds. These statements may appear incredible: but they are founded on exact and carefully performed experiments, and are true." (American Journal of the Medical Sciences, April, 1848.) Its other properties are thus summed up by Dr. Bigelow: "It preserves the wound perfectly from contact with air, be-

ing impermeable to the atmosphere; while its adhesion to the skin is so intimate as to prevent the possibility of air entering beneath its edges. The substance remaining in contact with the skin and wound, after the evaporation of the ether, is inert so far as any irritating property is concerned: and this can scarcely be said of any resinous adhesive cloth or preparation." (Mr. Erasmus Wilson considers that "as a mild stimulant, it is fitted to exert a local alterative action on the conjested capillaries of a chronic ulceration, and give activity to the healing process." "It does away with the necessity for sutures in incised wounds of almost any extent. It is sure to remain in intimate contact with the skin till union is complete; and, being quite impervious to water, and presenting a polished surface, it allows the surrounding parts to be washed without regard to the wound or dressing. It is colourless and transparent; thus permitting the surgeon to witness all that goes on beneath, without involving the necessity for its removal. No heat is necessary for its application; and the presence of a moderate degree of cold is only objectionable, in retarding the evaporation of the ether. It may be made at a trifling cost; and ounce phial, intrinsically worth little, being sufficient for a great number of dressings."

Mode of Application.—Dr Bigelow gives the following directions for the application of collodion: "For straight incisions, of whatever length, provided the edges can be brought together without difficulty, it is better to supply the solution in immediate contact with the skin, as follows. The bleeding should be arrested, and the skin thoroughly dried. If the lips of the wound are themselves in contact, the surgeon has only to apply a coating of the solution lengthwise over the approximated edges by means of a camel's hair pencil, leaving it untouched after the brush has passed over it until it is dry, during, perhaps, ten or twenty seconds. This first film will of itself have confined the edges together; but in order to increase the firmness of the support, more must then be applied in the same manner, allowing it to extend on either side of the incision, half an inch, or more." When the wound gapes, the edges must be held together; and if the wound be long, the collodion must be first applied to the upper part, and allowed to dry. In such cases, something more than the film of collodion is required to counteract the tendency of the edges of the wound to separate. For this purpose, Dr. Bigelow recommends gold-beater's skin, or oiled silk, which maintains the transparency of the dressing; it should be applied to the wound after the solution has dried and firmly contracted.

Lint, or a piece of cloth, or tissue paper, though not transparent, would answer. If, however, adhesion by the first intention be not desired, the collodion may be laid on transversely like strips of plaster; and one strip should be dried, and have the support of gold-beater's skin, before the rest is applied. Room is thus left for the escape of pus, and for the surgeon to view the progress of the wound. Collodion answers particularly well after the operation for hare-lip, or cancer of the lip, where union by the first intention, and a narrow linear cicatrix, are so desirable. The use of one or two sutures to the mucous surface is not obviated, as this will not permit the collodion to adhere with sufficient certainty. Mr. Maynard says, that "in most instances it was employed in conjunction with straps of cotton and sheep-skin, forming with them strong, unyielding, adhesive straps, bandages, and encasements; and, after many experiments, I am convinced that this is the best and most effectual way in which it can be applied as an adhesive agent in surgery." (American Journal, ut supra.) The following remarks on its use in conjunction with bandages, in the dressing of wounds, occur in the Annales de Therapeutique, Sept. and Oct. 1348, p. 242. When dipped in the collodion, bandages are apt either to be difficult of removal, or not sufficiently adhesive, from having dried before they can be applied. In small wounds, bandages are unnecessary; but in cases where they are necessary, they should be strongly fastened at each turn, by a layer of collodion at the most distant part only; and the free part of the bandages may

be sewed, or tied with strings. The adhesive dressings may be softened with collodion to remove them, and it may be removed from the hands by washing them in ether. Collodion may probably be used instead of starch or dextrine, to a bandage enveloping a limb; or perhaps the limb may be coated with several layers of the solution. Numerous other applications of the substance may be made; and its use to the pathologist or student, in dissections, must be obvious. *Ibid, p.* 202.

201.—ON SOME USES OF COLLODION, AND ON CERTAIN IMPROVEMENTS IN ITS APPLICATION.—By JAMES STARTIN, Esq., Surgeon to the London Cutaneous Infirmary.

[Mr. Startin finds that collodion acts rather as in irritant in the more inflammatory affections of the skin, owing to its contractile property; but from this very property it is extremely useful in procuring the union of wounds by the first intention. It is particularly applicable after the operations for hare-lip, entropium, and ptosis. Speaking of the latter, Mr. Startin says:]

Is is so contractile, that when applied to a part that is not stretched to the utmost by muscular action, it very much impedes, or altogether prevents the exercise of this power; and this hindrance continues until the cracking or dividing process commence, of which mention has been made. It is only necessary for an experimenter to point over the angles of his closed mouth, or the back of his open hand, to become convinced of the extent of this contractile property, and the degree of resistance it is capable of exercising. Such being a brief outline of the properties of collodion, it must be obvious, that without modification, it is applicable to very few diseases of the skin; yet the very qualities that unfit it for many of these complaints, render it a most useful agent in other cases for which it has been for some time used by continental surgeons, viz., in the union of wounds by the first intention; and it would seem particularly applicable in operations about the face, and as the best means of uniting many delicate parts; for instance, the red portion of the lip in the operation for hare-lip, and of the eyelid, after operations for entropium and ptosis.

Pure collodion may also be advantageously employed as a palliative in the latter case, as also in various paralytic affections of the facial muscles, where the antagonist muscle has distorted the features, the parts being adjusted by the finger to their normal position before the collodion is applied, and this position maintained until the solution is perfectly dry. As a bandage, also, to enlarged joints, of the fingers especially, the pure solution will be found useful; and its pellicle would seem to deserve a trial as an artificial tympanum, where such a contrivance may be indicated, the edges of the new membrane being readily attached to the walls of the meatus by a small brush, armed with the solution in its liquid form. Other instances, where the contractile qualities of collodion may prove of advantage, will, doubtless, present themselves to the surgical mind; but it will not be found so applicable to discharging ulcers as has been stated, (save in the case of chaps and fissures), unless applied after the following directions:—Dry the ulcer with bibulous paper; wash over its surface with a large soft brush, wetted with ether; dry a second time with the paper; apply by means of the same, or a second brush, the collodion in a circular manner, so as to cover the edges of the ulcer to a greater or less extent, as may be deemed necessary, and varnish over so much of the ulcer itself, as to leave a *small central opening* for the escape of the discharges. In this way, collodion becomes a most important adjuvant in the treatment of cases that are commonly regarded as the *opprobia* of surgery. I allude to chronic ulcers of the legs; for it will be perceived, that this expedient at once reduces a large sore into a small one, and does not prevent any stimulus judged

favourable to cicatrization being applied in the dry form, before the varnishing process is commenced.

[Mr. Startin has been engaged in endeavouring, by the addition or other substances to collodion, to fulfil the following intentions:]

1st. To render the liquid opaque, and of such a tint as not to be distinguished from the skin on which it might be applied, whilst it should conceal defects; 2nd. To remove its great contractility and render it opaque, more elastic, and more closely resemb'ing the solution of gutta percha I have referred to, without including the unfavourable properties of this solution; and 3rdly. To produce a varnish which should be porous, and thus imitate, as nearly as possible, the natural scarf skin, and thus prevent much of the heat and tumefaction which attends the application of an impermeable covering on the skin.

The first of these objects is readily attained by adding an ethereal tincture of tumeric or saffron, and of red Sander's wood, or alkanet root, so as to produce the required tint. The second after numerous experiments, is found to be best accomplished by the addition of a drying, or a fat oil, as linseed, cocoa nut, pure cod-liver, or lard oil, previously dissolved in ether; the proportion being half a drachm to a drachm of oil, to an ounce of collodion—the exact quantity being regulated by the greater or less degree of elasticity and opacity required. It is quite remarkable, how completely this simple procedure will accomplish the desired end; for by its means, and the coloured collodion, so exact a representation of the cuticle can be obtained, that the varnish produced, when applied in a thin coat, cannot be distinguished from the surrounding skin, without close observation and magnifying power. It would also appear to be equally elastic with the cuticle, whilst its contractility is much modified, or entirely lost, according to the proportions of the oil employed; care must, of course, be taken to *use the best materials only*, or the colour will not be permanent, but liable to change to a yellow dirty hue, whilst it will prove an irritant instead of a soothing application. I have much pleasure in recommending, as a most elegant preparation, the combination made by Allen & Co., of Plough Court, Lombard-street, or of Taylor Brothers, of Vere-street, Oxford-street, under the designation of *Collodion, tinctum preparatum.*

The third object I have alluded to, namely, that of rendering the varnish porous, is also to be obtained by the addition of a small quantity of purified, highly concentrated, nearly anhydrous glycerine (the useful therapeutic agent I introduced through the pages of the Medical Times three or four years ago, and which I have every reason to believe has verified, in the hands of many, as it has in my own, all that I then said of it). By this substance the collod. tinct. ppt. can be rendered as soft as a thin layer of ointment, which it resembles in most respects, save that it forms over the part a uniform covering which is coherent, and not liable to be washed away by slight discharges, or external gentle ablutions, whilst it does not require the support of lint or linen.

Having now detailed, at some length, all the necessary modifications of this new addition to the "appliances and means" of modern surgery, it may be expected I may say a few words as to its practical application and utility. A glance almost at the properties it has been described as possessing, will show that it may, under one modification or other, be used where plaster, cerate, or bandage may be required, and where great strength and pressure is not needed: and also that it admits of the use of various other applications, stimulants, caustics, &c., to the parts afflicted, which can be employed before the collodion is applied. As a simple varnish in cases of chaps, chilblains, and other minor affections of the cutis at this season so prevalent, the collod. ppt. will be found a panacea; but in the bed-ridden, who are not provided with Dr. Arnott's scientific hydrostatic contrivance, it will be found no ordinary boon, as also in cases of incontinence of urine,

and excoriations from the pressure of instruments, trusses, &c. As a prophylactic for practitioners in midwifery, in suspected cases, or where the hands are injured by disease or accident, it will be invaluable, as also in the dissecting room. Many other circumstances under which its application may appear to promise an effectual result, will suggest themselves to every practitioner, so that it is needless longer to dwell upon them; I shall therefore only add that it should not be applied in too thick a coat, and that a large soft camel hair brush must be used, which should afterwards be washed in ether. A bottle of ether, also, might always be conveniently supplied with the collodion, so as to reduce the solution to the required thinness. Where ulceration is present, a portion in the centre of the ulcer should be left uncovered by collodion, in the manner I have already mentioned; and when any part concerned in motion is to be coated, the skin should be put upon the stretch, and marks, &c., should be concealed with a proper pigment, before the collodion is painted over the part.

Medical Times, Dec. 23, 1848, *p.* 177.

202.—ON A NEW AMALGAM FOR STOPPING TEETH.—By T. W. Evans, Esq., Paris.

[Mr. Evans states that he has employed this amalgam successfully for a length of time. He says:]

It is composed of chemically pure tin, prepared with much care, to insure its being free from any other metallic substance, and combined with prepared cadmium, in small quantities, and mercury. In using it so much mercury should be employed as may be required to make it more or less plastic.

The cavity of the tooth being previously thoroughly freed from carious matter, can be carefully filled with paste thus formed. In the course of a few minutes it hardens into a solid, and gradually acquires a still firmer consistence and toughness, exhibiting a whitish colour, or, if cut or burnished, a metallic lustre, like that of pure tin.

The advantages of this composition are, I believe, such as are possessed by no other amalgam. It retains its colour perfectly, neither oxidising on the external surface, nor on that applied to the cavity, and, of course, it does not discolour the tooth itself. It fills each crevice of the cavity, and by effectually excluding moisture and all kinds of deleterious matters, prevents the ocurrence of caries, and becomes sufficiently hard to withstand the friction of mastication. To these most important advantages may be added others—*e. g.* it is easily and quickly prepared, without the trouble of beating it, as is the case with some of the amalgams hitherto used.

It is readily applied to the cavity of the teeth, and without the creaking, disagreeable sound which attends the employment of other preparations. It will not amalgamate with, or injure any gold clasps or plate bearing artificial teeth, which may be placed in contact with it; and, in case of its removal being necessary, it can be cut out as easily as a gold filling, as it forms a tough, almost ductile substance, and not hard, brittle one, like the ordinary amalgams.

I have submitted it to the inspection and trial of some of the best dentists here and in London. As far as their opportunities of investigating have hitherto extended, I think they fully agree with me as to its advantages. It is, I believe, the best filling hitherto used, in those cases where amalgams are thought to be useful; and some of my friends are willing to award it higher praise even than this.

Medical Gazette, April 20, 1849, *p.* 685.

203.—NEW CHAIR FOR DENTAL SURGERY.

We have lately examined a chair, to be used in the practice of dental surgery, which has been invented by Mr. Gilbert, a surgeon, of Suffolk-place, Pall Mall, and which we consider presents very ingenious and useful peculiarities. Its chief feature is, that it removes the fulcrum required in the extraction of teeth *out of the mouth*, so that the jaw is not liable to sustain injury. It consists of a padded and easy seat, with arms; a moveable back, which can be readily let down to any inclination, and which (the back) at its summit is semi-circular, so as to receive and retain steadily the head of the patient. At the right side is let in a strong circular steel bar; on this runs another at right angles, which can be promptly fixed by a screw at any required height. The cross-bar, at its termination, holds a flat piece of metal, which, being covered by lint, is brought opposite to, or within, the mouth, and serves as the fulcrum for the forceps used by the operator to rest on. In extracting the teeth of the lower jaw, the forceps is placed *superiorly to* this fulcrum. In the removal of teeth from the upper alveoli, it is only necessary to let down the back of the chair, when the operator, standing behind the patient, makes the *inferior* surface of the bar his fulcrum, and proceeds to extraction exactly in the same manner as in the former case. The forceps having grasped the tooth, the operator, with a single movement *in one direction*, raises the latter out of its socket.

Lancet, *Dec.* 2, 1848, *p.* 608

204.—ON THE TREATMENT OF TOOTHACHE.—By C. Stokes, Esq.

[Mr. Stokes divides toothache into three stages:]

1st. In which it is caused by simple exposure of the pulp cavity, with diagnostic signs of that condition.

2d. In which, superadded to this condition, we have also a discharge from the pulp cavity.

3d. In which considerable pain occurs when either vertical or lateral pressure is applied to the tooth, accompanied by a slight elevation of it from its socket, after several hours of repose.

Of these three stages of odontalgia, both the first and second are within the reach of remedial measures. In the third stage, permanent relief is only to be obtained by the loss of the tooth; extraction is indispensable to prevent the recurrence of pain. The inflamed pulp, or "nerve", as it is ordinarily termed, being the principal, if not the only cause of pain, in the first stage of odontalgia, the indication is obviously to reduce its extreme sensitiveness—speedily, effectually, and with the least possible amount of pain; hitherto the agents employed for the accomplishment of this object have been, generally, so unsuitable, that they have fallen deservedly into disuse. Thus the employment of red-hot wire, the application of either the concentrated nitric or sulphuric acid, the potassa fusa, &c., is now happily obsolete—the injury frequently received by the soft parts from their use compelled their abandonment. For the removal of pain, as well as for the destruction of the exposed pulp, the combination of a very minute portion of arsenic, not exceeding the twentieth part of a grain, in combination with muriate of morphia and creasote, is invaluable; by its use we can check, with certainty, the torture of toothache when existing in the first stage. and I do not hesitate to affirm, from an experience extending over a multitude of cases, that this remedy may be regarded in the light of a specific. I apply it on a very minute portion of cotton wool, to the sensitive portion of the tooth, and its retention *in situ* is maintained by softened wax.

In twenty-four hours after its application, the dead dentine can be cleared away without pain. I recommend the pulp cavity to be completely laid open, the pulp to be broken down, and, if not too painful at the time, to re-

move it; but should any pain be complained of during this operation, it is advisable to desist, and renew the arsenical combination. The tenderness will have subsided by the following day, when the operation may be completed, and the tooth be plugged with gold, or any other suitable substance, in the usual way.

The second stage is most efficiently treated by primarily subduing the pain and tenderness by the use of the arsenic, morphia, and creasote. I then recommend the excision of the carious dentine, which being accomplished, that morbid condition of the pulp cavity, which gives rise to the secretion perceptible in this stage, is to be changed to one of health. To effect this change, I inject daily into the pulp cavity a weak solution of the nitrate of silver in distilled water, or an aqueous solution of alum of a moderate strength. The restoration of a healthy action depends much upon the amount of organic derangement; but, under ordinary circumstances, the daily injection of either of these solutions, for about a week or ten days, is sufficient for the attainment of this object.

In the third stage, the general principles of antiphlogistic treatment are to be followed; thus, the application of leeches to the gums, the use of sialagogues, and counter irritants, with the exhibition of saline purgatives, combined with attention to the general health, are the remedies which occasionally afford relief. In this stage, however, experience gives but little encouragement to hope that permanent benefit can be derived from any remedy other than the loss of the affected tooth by extraction.

Medical Times, April 14, 1849, *p.* 473.

205.—USE OF COLLODION AND ASBESTOS FOR TOOTHACHE.—By J. Rogerson, Esq., London.

I have frequently applied collodion in severe cases of toothache, arising from exposure of the nerve, with perfect success, when no persuasion could induce the patient to submit to extraction, either with or without the use of chloroform or ether.

The method I adopt is to let the patient first wash the mouth with warm water, in which a few grains of bicarbonate of soda has been dissolved. I then remove from the cavity any foreign substances likely to cause irritation. After drying the cavity, I drop, from a point, the collodion, to which has been added a few grains of morphia; after which, I fill the cavity with asbestos, and saturate with collodion. Lastly, over this I place a pledget of bibulous paper. In a few seconds the whole becomes solidified, and forms an excellent non-conductor of heat and cold to the exposed nerve. By occasionally renewing this, I have been enabled to effect a more durable stopping than with gold. *Medical Times, Dec.* 23, 1848, *p.* 188.

206.—HOW TO REMEDY THE FRAGILITY OF NITRATE OF SILVER CRAYONS.

The brittleness of nitrate of silver is the source not only of considerable loss of the material itself, but frequently of danger to the patient, as when the fauces, œsophagus, urethra, bladder, and cavity of the uterus are being cauterized. M. Chassaignac has succeeded in remedying this evil, by having in the centre of the stick of caustic a thread of platinum wire. M. Blatin secures the same object by a wick of cotton, which is placed in the mould before the fluid nitrate is poured into it. The crayon thus prepared is rendered more solid, and, when broken, the fragments remain attached to one another.—*Bulletin de Therap.*, Jan. 1849, and *L'Union Med.*, Jan. 18, 1849. *Monthly Journal, May*, 1849, *p.* 112.

297.—ON ENDOSMOSE AND EXOSMOSE.—By M. MATTEUCI.

Matteuci has published another work in which he repeats the general views already put forward in his previous works, and also added a great many new views and experiments, especially on endosmose and exosmose, a few of which I shall notice here, as they are probably not generally known to most of my readers.

If a number of tubes with fine bores be immersed in a fluid, it will rise in them exactly proportional to the size of the bore; the finer the bore the higher the fluid will rise. This action is called capillary attraction, and upon it depend a great variety of phenomena, not only in inorganic nature but also in vegetable and animal bodies, such, for example, as the effects known as imbibition, exosmose, and endosmose. In most animal and vegetable organs the structure resembles in effect a bundle of such tubes from the small spaces which exist between the parts. As the phenomena depend more on the nature and density of the fluids than on the substance of the tube, different fluids will ascend in the same tube, under otherwise similar circumstances, to an unequal height. If the blood happens to be altered in disease, so as to be rendered thicker or thinner by an increase or diminution of the fibrine or blood globules, or thinner by bleeding, or if it is modified by medicines, its capillary action will be changed—water, oil, spirits, soup, &c., will disappear from the stomach quicker or slower than in a healthy natural state. The absorption of a liquid will take place more rapidly the higher its temperature is. This absorption or imbibition is not influenced by the pressure or by the moisture of the atmosphere; it produces heat and electricity; and as it plays a very important part in the capillary motion of the blood, it is probable that it has some influence on the development of the chemical activity of organic bodies. The cause of capillarity is the opposition of heterogeneous and homogeneous attraction between a fluid and the solid tube. Endosmose and exosmose on the other hand depend on the mutual attraction of two fluids, one of which is more capable than the other of freely wetting a porous solid which forms part of the combination. Thus if we dip a piece of bladder or other animal membrane into water it will be wetted and completely soaked with the liquid, but if we dip it into spirit it will not be wetted. If we take a funnel to the stem of which a long tube is attached, and cover the mouth with a piece of bladder or other animal membrane, and then fill the funnel with spirits of wine, and place it with the bladder downwards in water, the water will pass into the funnel and mix with the spirit, and a column of liquid will be forced up the tube. The moving power in this case is the force of adhesion between the water and the bladder; the water ascends through the pores of the bladder as it would ascend through any other tubes, and comes in contact with the spirit, with which it unites and is at once removed, and this process goes on for a certain time; the height of the column of liquid in the tube being in some degree an index of the power called into action. Other fluids having a strong tendency to unite with water may be substituted with the same effect, and even solutions of different solid substances, or in fact any two liquids of different densities. In case both the fluids thus placed in juxta-position are capable of wetting the membrane or other porous diaphragm interposed there will be a flowing in as well as out, and hence the names which Dutrochet first gave the phenomena, of exosmose or flowing out, and endosmose or flowing in. Gases are also capable of exhibiting this phenomena, with the exception that in this case there is no limitation, as they are capable of unlimited diffusion through each other's mass. Matteuci applies this development of force to the explanation of a great variety of phenomena; among others he mentions the experiments of Poisseuille's on the purgative and astringent action of medicines.

He observed in drinking Seidlitz water that an endosmose of the serum of the blood took place with these waters, and with glauber salts, sea water,

and other saline solutions, through the animal tissues. This is exactly what occurs in all cases of purging produced by such salts, the endosmose of the serum and the solution of the salt in the intestines. In such cases a quantity of the serum is carried off by the bowels, and the rapidity of the action is in proportion to the strength of the solution.

Muriate of morphia added to saline solutions diminishes the endosmose of the serum with saline solutions in the intestines: hence its action in diarrhœa.

Absorption is not merely an imbibition of a fluid by the tissues with which it is in contact, but a transfer of the fluid to the blood-vessels as in the experiment with the spirit mentioned above. It is in fact a true case of endosmose and exosmose, and will be facilitated by the greater number of vessels which may exist in the part; hence the lungs are better adapted for it than the cellular tissues, and the skin least; hence, also, the rapid absorption of ether and chloroform through the lungs. Absorption in general depends on the mass of the fluid already present in the body,—the more present the less is the absorption: it also changes with the temperature,—warm drinks are more rapidly absorbed than cold. The rapidity with which the fluid moves also facilitates it.

Exhalation is the opposite of absorption, and like it depends on the permeability of the vessels and on the mass of the liquid; is stronger in dry than in moist atmospheres, and frequently diminishes or increases tenfold. Imbibition, capillarity, and even molecular attractions, may overcome chemical affinity, and hence the organs of secretion cannot be looked upon as simple filtering apparatus. *Dublin Quarterly Journal, Feb., 1849, p. 109.*

208.—ON THE ACTION OF CELLS IN SECRETION.

Thus, in secretion, one cell selects its peculiar principles, and becomes filled with bile,—another with saliva; but, the active agent being in every instance a simple cell, it is no wonder that changes in the common liquid, within and without the cell, should affect the cellular endosmose, and that secretions should become, to a certain extent, vicarious; that the elements of bile, for example, should be separated by the cells of the kidney, and of the urine by those of the skin. Still more important is the recent discovery of one of the most peculiar products of one excretion, urea, even in the healthy fluids of the body,—as in the aqueous humor of the eye; and of both urea and uric acids even in the blood itself, without the intervention of any secreting organ: a circumstance so improbable in the history of secretion, that although, as Dr. Prout informs us, urea was thus seen by him in 1816, he could not believe the fact till it had been established many years afterwards by Dr. Christison and other observers.—*Hawkins' Hunterian Oration.* *Medical Gazette, April 6, 1849, p. 586.*

209.—ON THE CHEMICAL RELATIONS TO WAX AND FAT.—By B. C. Brodie, Esq.

[In a lecture by Mr. B. C. Brodie at the Royal Institution,]

The lecturer observed that there were chemical as well as animal fats, and that some of these are almost identical in properties. Among the fats shown were those from the cocoa-nut, the chocolate-nut, the palm, which contains a colouring matter the same as that of butter, the nutmeg, or mace, all of vegetable origin; also tallow and spermaceti, of animal origin.

Of one kind of fat, butter, the lecturer spoke more particularly. Milk, when mixed with alcohol, separates into a solid and fluid part. When filtered, the fluid part is transparent, and is almost wholly water: the solid

part lying on the filter consists of various substances, especially a cream cheese, composed of butter and casein. 100 parts of milk contain 3 parts of butter, 5·1 of casein, and 4·6 of sugar of milk. Butter is composed of a solid and a fluid part: the solid part, margarine, may be separated into margaric acid, a beautiful crystallizable acid, and a sweet principle called glycerine.

Wax.—The cell of the bee is composed, as it were, of bricks of wax cemented together by an oil. Wax is an abundant product of nature, obtained from various sources. Chevreul showed the bloom on the plumb and grape to be wax. It is also found in grasses, and in most plants. It is an interesting question, whether bees derive wax, as well as honey, from plants or whether they form it in their own bodies? The true source of wax is the honey on which the bee feeds. Dumas and Milne Edwards found that wax was produced by bees which were fed on sugar alone. The bee is not the only wax-producing insect. A substance like spermaceti is brought from China, which appears to be the product of a small insect of the size of a fly, which feeds on a plant like the privet.

Mr. Brodie then described the properties of alcohol and acetic acid, and their chemical resemblances to the fats.

Alcohol, when it burns, is converted into carbonic acid and water. By the slower action of oxygen it forms vinegar. By passing alcoholic vapour over finely divided platinum, it is converted into an acid (acetic acid), as was proved by its reddening litmus paper. From wax and alcohol, acids are produced having an analogous chemical composition. Acetic ether is a body chemically analogous to wax. The product of the distillation of wax is a hydro-carbon, a crystalline body; the product of the distillation of acetic ether is also a hydro-carbon, olefiant gas. Acetic ether is a volatile body, giving a flavour to wine. There is a volatile body also in all fats.

As to the physical nature of these bodies, wax and fat are similar, but alcohol itself, although apparently very unlike these, is probably nothing else than a very fluid wax or fat. Alcohol cannot be frozen, but under the combined influence of an intense cold (—198°) and pressure, it becomes viscid or oily, and looks like melted wax. It is an interesting question, whether fat is absorbed into the system ready made. Casein passes into the system unaltered, but is it so with fat?

Liebig and other chemists consider that sugar is the source whence the fats are produced in the animal system. By fermentation, sugar, it is well known, passes into carbonic acid and alcohol. Sugar has not yet been transformed into fat in the laboratory; but butyric acid, an acid contained in butter, has been obtained, by M. Pelouze, from sugar. Mr. Brodie concluded his interesting lecture by anticipating that, hereafter, chemists will probably succeed in making wax out of sugar.

Medical Gazette, March 16, 1849, *p.* 474.

310.—ON THE FORMATION OF FAT IN THE ANIMAL ECONOMY.—By Dr. J. R. Wardell.

There can be no doubt, Dr. Wardell observes, that fat is very frequently derived directly from the food ingested, since fat vesicles have been demonstrated in the fluid of the thoracic duct; but it also appears probable that fat is actually formed in the economy, and that its formation is favored by the use of various non-azotized substances, which contain much hydrogen and carbon. Dr. W. goes on to say:]

Experiments made in the feeling of the lower animals have proved how the addition of sugar to their food favours the feeding process. For cane sugar, the following is the formula:—$C^{12}H^{9}O^{9}$; starch, $C^{12}H^{9}O^{9}$; here are then those indispensable elements in the formation of fat. Starch and sugar are the great sources from which fat is produced. Now if we have

to abstract from starch $C^{12}H^{10}O^{10}$, 9 atoms of oxygen, fat would be the result, as the latter is a formula for this substance. From this and other facts of a like nature which might be given, it is incontrovertible that fat is produced by a deoxidating process on non-azotised materials. "Liebig has pointed out,' says Turner, that 'when there is deficient supply of oxygen, the production of fat, which is the consequence of this deficiency, yields a supply of that element, and thus seems to keep up the animal heat and the vital functions. * * * "A goose tied up, and fed with farinaceous food altogether destitute of fat, acquires in a short time an increase of weight of several pounds, the whole of which is fat." "Again, the bee produces wax, a species of fat, from pure sugar.' The negroes of the West Indies, and the Chinese slaves, sometimes acquire an enormous size during the sugar season, by drinking cane juice; and it was remarked by Galen, that the keepers of vineyards, who live on nothing but figs and grapes, become fat. The ladies of Tunis and Tripoli are fattened to please their lords, with farinaceous food, and a seed called *drough*. Among the Asiatics there is a sect who pride themselves on their extreme corpulency, their diet consists of farinaceous vegetables, milk, sugar, sweetmeats, and ghee. They look upon corpulency as a proof of opulence; and many arrive at a great degree of obesity without tasting anything that ever has lived! Numerous instances might here be supplied, where great drinkers of malt liquors have attained to extreme degrees of corpulency. It is the opinion of some that a century ago, fat people were then far more common than in these days, when the yeomanry and middle classes drank deep potations of malt liquors, instead of ardent spirits. The elementary constituents of ardent spirits being alcohol, and an abundance of carbon entering into the formation of that compound, there is thus supplied an important material for the generation of fat; and was it not for the stimulation which alcoholic liquors give to the circulating function, and the increased action of the kidneys, which thus oppose the obese tendency, all descriptions of spirituous compounds would render dram drinkers more liable to corpulency. Those persons who are great gin drinkers, are from the diuretic properties of that spirit, less prone to become fat than those who are great rum drinkers; a fact which the vulgar have long ago observed, and which has amongst the lower orders passed into a truism. From what has been said above, it must be regarded that fat is secreted by a peculiar tissue, the adipose; and to this view most modern physiologists subscribe. Dr. Hassall, in a recent number of the Lancet, thus delivers himself relative to the fat formation. "It will be observed by the use of a lens only, that these masses (the fatty) are each composed of a number of distinct and opaque bodies of various sizes, presenting a smooth outline, having a more or less rounded or oval form, and held loosely together by fibro-cellular tissue, the extension of which forms the envelope that invests each of these bodies; it will also be further noticed, that each mass of fat is supplied with one or more bloodvessels, and that these break up into numerous lesser branches, one of which goes to each of the previously described bodies, being conveyed to it by the connecting fibrous tissue, and having reached the body it undergoes a further subdivision, the branches extending over its entire surface." The writer then proceeds to say that the vesicles are filled with cells, and these cells again with globules; that these globules go on becoming larger in size until they assume the normal characteristics of the matured fat vesicles. From these observations it is obvious there is a genuine secernine process; that there is a filamentous investment covering each vesicle; and that the fat particles are not merely placed in juxta-position, as contended for by Meckel; and it may be inferred that the granules are produced from the blood by an exosmosial process at the capillary extremities, like unto what we know of similar functions in the formation of other tissues in animals as well as in the vegetable kingdom.

Medical Gazette, March 30, 1849, p. 535.

211.—USE OF THE MICROSCOPE.

The microscope appears at present to be effecting changes in our knowledge of nature, no less wonderful than those views which similar instrumental improvements are opening to our senses through the telescope. I know not which extreme in magnitude is most calculated to excite our admiration and our reverence for our common Creator—the contemplation of the estimated 18 millions of telescopic stars in the milky way, or the 40,000 millions of silicious shells of gallionellæ, according to Ehrenberg's calculation in a single inch of polishing slate!—*Hawkin's Hunterian Oration*, 1849. *Medical Gazette, April 6, 1849, p. 604.*

212.—NEW INSTRUMENT FOR THE TREATMENT OF ANEURISM.

[Dr. Carte has made a slight alteration, not in the principle, but in the mechanism of the instrument for compression in aneurisms. It is simply that "the compression medium is elastic, instead of an unyielding force," by adopting vulcanized Indian-rubber straps. Some other alterations are pointed out which may be advantageous.]

Dublin Medical Press, May 16, 1849, p. 309.

213.—TINCTURE OF INDIAN HEMP IN SANGUINEOUS UTERINE DISCHARGES.

[Dr. Churchill lately recommends this medicine to the notice of the Dublin Obstetrical Society. It had been first used in these cases by Dr. Maguire, of Castleknack.]

Dr. Maguire had prescribed a small dose of the tincture of Indian hemp for a poor woman labouring under some form of neuralgia; and on inquiring into the effects a few days afterwards, the patient declared that it had cured both her complaints, and then, for the first time, informed Dr. Maguire that she had been suffering from menorrhagia. This led him to try it in some similar cases, and finding equally satisfactory results, he mentioned the fact to Dr. Churchill, requesting him to try it, which he had done extensively. Dr. Churchill mentioned to the late Dr. Hunt and other friends, and the remedy he believes has had a pretty fair trial; and if their experience (as he believes) confirms his, the Profession has reason to congratulate itself upon the addition of a most valuable remedy for a class of diseases whose materia medica has been hitherto very limited. The largest class of cases in which Dr. Churchill has found the most unqualified benefit are those of menorrhagia, where the discharge, though excessive, is fluid, and but little mixed with clots, and when the uterus is not enlarged. In many such cases five drops of the tincture three times a day have stopped the discharge in twenty-four or forty-eight hours. When there is pain, too, if it be not excessive, relief is obtained without the addition of another anodyne. In other cases, when the discharge, whether too much or not, has returned too frequently, Dr. Churchill has succeeded in arresting or postponing it to the proper period by the tincture, just as can be done by means of ergot of rye. In those cases of menorrhagia, when the uterus is much congested and enlarged, and where the discharge is largely mixed with coagula, although it has succeeded in many cases, yet it has failed in other instances, and the success in some has been incomplete. Nevertheless, even in these, it is of great value; and finding that it possessed power even over uterine hemorrhage, it occurred to Dr. Churchill to try it in threatened abortion at an early period of the attack, when the hemorrhage was slight, and the pains rare and weak. In such cases, ergot of rye is out of the question; lead has but little power. Opium and cold applications and quiet are our principal remedies, but they often fail; and, therefore, the addition of

a direct and powerful agent which should combine an astringent with an anodyne, would be a valuable acquisition. Dr. Churchill has now tried it in six or seven such cases, and he has found that when employed sufficiently early, it succeeded remarkably well, but that at a later period it failed partially or wholly. Lastly, Dr. Churchill has tried it in three cases of cancer at a tolerably early period. He gave it on account of continued draining of blood, not to any great amount, and thought that perhaps its anodyne quality might to a certain extent supersede the use of opium. He does not think hat these cases are sufficient for any definite conclusion as to its value; but the results will certainly induce him to repeat the trial. He does not for a moment suppose that it or anything else will permanently arrest the downward course of cancer, or that the hemorrhage will not return; but every degree of success, however temporary, every relief, even though slight, is of great value in these cases. Dr. Churchill does not pretend to explain its *modus operandi*; he can only say, that it appears to exert an astringent power in hemorrhages from mucous surfaces, and, also, to have a sedative or anoydne effect. The preparation he has invariably used is Mr. Donovan's tincture of the resin. He begins with five drops three times a day, in a few cases increasing it to ten, but seldom more. The effects are very soon seen, generally in twenty-four or forty-eight hours, often much sooner, nay, in some cases mentioned to Dr. Churchill by Dr. Hunt and Dr. Maguire, the effect was instantaneous. In some cases the beneficial effect was accompanied by a slightly unpleasant feeling in the head, resembling that from an extra glass of wine. In one case only has Dr. Churchill seen any more disagreeable results; but in that, five drops produced an extraordinary degree of nervousness and a sense of sinking, almost of dying, which gradually passed off. *Medical Times*, *May* 19, 1849, p. 571.

214.—ON THE ADMINISTRATION OF CHLOROFORM.—By Dr. J. Snow.

Experience requires me to make the remark of this substance, which I made last year of ether,—that I know of no state of the patient, with respect either to age, constitution, *or disease*, which positively contraindicates the use of it, where it is required to prevent the pain of a severe operation, or, I may add, of one the patient greatly dreads. In making this statement, I must not be considered to be recommending the indiscriminate use of chloroform. On the contrary, I consider that everything connected with the patient should be taken into the account, and duly weighed, and the decision arrived at accordingly.

The period of life in which chloroform acts most pleasantly is childhood. In children, under thirteen years of age, it scarcely ever causes either mental excitement, or any of the struggling which is not unusual in adults just before insensibility ensues, and immunity from pain is obtained with less narcotism of the nervous centres than in older subjects, as I stated before.

It is never necessary to carry the narcotism further than the beginning of the third degree in children, at which time I believe their eyes are always turned up; and very often it is not requisite to carry the effects of the vapour beyond the second degree. Indeed, I have seen a child look about it with a smile on its face in the middle of the operation of lithotomy.

In a paper which I read at the beginning of the year, I recommended ether for children, in preference to chloroform, on account of the action of the latter being extremely rapid in young patients; but with the apparatus I described in the last paper, the vapour of the chloroform can be so diluted with air as to become as mild and gradual in its action as one pleases, and since I have had small facepieces suited for infants. I have generally given chloroform, and have admistered it to a great number of children, from three weeks old upwards. But when the practitioner is only provided with a handkerchief or sponge, I still consider that the use of chloroform is not perfectly safe, and that ether ought to be employed.

As age advances, the action of chloroform, though equally safe and effectual, is less uniformly pleasant in appearance. In old age, indeed, there is frequently either groaning or a slight degree of stertor, not only during an operation, but even before it begins; so that the effect of the vapour, although quite as satisfactory to the patient, is less agreeable to the friends who may be looking on, than in young subjects. I have often exhibited chloroform in extreme old age, and always with the best effects; indeed, I consider that age is not a source of danger when care is taken. Old people are generally rather longer than others in recovering their consciousness, probably because, owing to their circulation and respiration being less active, the vapour requires a longer time to escape by the lungs. They sometimes do not perfectly recover their former state till twenty minutes or half an hour has elapsed from the conclusion of the operation.

The general condition of the patient as regards robustness, or the contrary, has a considerable influence on the way in which chloroform acts. Usually the more feeble the patient is, whether from illness or any other cause, the more quietly does he become insensible; whilst if he is strong and robust, there is very likely to be mental excitement in the second degree, and rigidity of the muscles, and probably struggling in the third degree of narcotism. This action of the muscles generally occurs when they are well nourished, whilst in the cases in which they are flaccid, and probably pale, it is usually absent.

[There is often a little trouble with hysterical patients, but Dr. Snow thinks that this should not prevent the use of chloroform, when on other accounts it is necessary. Epilepsy does not contra-indicate the use of chloroform. Neither does pregnancy; but it is not advisable to in duce very profound insensibility in the pregnant state. And choloroform may be safely administered to patients with any affections of the heart or lungs that do not themselves contra-indicate surgical operations. Respecting the diet of patients about to inhale chloroform, Dr. Snow says:]

The best preparation appears to be a very moderate breakfast or luncheon two or three hours before the inhalation. The operations in the hospitals are usually performed soon after the patient's dinner hour. The most suitable arrangement in these establishments seems to be, that the subjects of operation should have no dinner, but should have a slender lunch during the forenoon; such as a little bread and butter, bread and milk, or gruel.

[Dr. Snow gives the following directions for the exhibition of the vapour in such operations as amputation:]

When voluntary motion is no longer apparent, in order to become informed respecting the state of the patient, the eyelid should be gently raised, touching its free border. If he look up it is evident that the narcotism has not exceeded the second degree. If no voluntary motion be excited, the third degree is probably attained, and if the eye be found turned up, this is pretty certain. But, notwithstanding this, if involuntary winking be occasioned by touching the eyelid, it is necessary to continue the vapour a little longer before the operation is commenced. In doing so, however, if the narcotism have already reached the third degree, and there be no particular rigidity or struggling, the valve may be opened a little further, so as to give the vapour in a more diluted form, or the inhalation may be intermitted for two or three inspirations at the time. In this way insensibility of the nerves is obtained, without increasing the narcotism of the nervous centres. As soon as the sensibility of the conjunctiva is abolished, or so far blunted that the free edge of the eyelid, or the eye itself, can be touched without causing decided winking, the operation may be commenced with confidence that there will be no pain, and no involuntary flinching that will interfere with the operation. When there is struggling or great rigidity in the third degree of narcotism, it is requisite to continue the vapour a little longer till it subside. If there be any approach to stertorous breathing, the inhalation should at once be suspended, as was stated in a former paper.

Stertor, however, never begins till the patient is perfectly insensible. The time occupied in the inhalation is usually from two to three minutes. The operation having been commenced, the medical man having charge of the chloroform should watch the patient's countenance, and if there should be any sign of returning sensibility, give a little more vapour during the short time occupied in removing the limb. After the amputation is completed, the vapour need not be repeated until there is decided evidence of sensation. When the arteries to be tied are not numerous, it is sometimes not necessary to repeat the inhalation. Generally, however, it is requisite to give a little chloroform at intervals, and if cold water have to be applied to stop the oozing of blood, or the flaps have to be united by sutures, it is advisable to keep the patient partially insensible till this is done.

Medical Gazette, Dec. 15, 1848, *p.* 1021.

[In a paper published in another journal, Dr. Snow observes :]

To facilitate the directions for giving chloroform, the various effects it is capable of producing on the nervous centres, may be divided into five degrees. The first degree includes the slighter effects that are experienced by the patient, whilst he retains sufficient consciousness to appreciate his situation, and know what is occurring around him. The second degree is the dreaming, or wandering state of the mind, which is observed, when the patient is not silent, immediately to follow the loss of consciousness. In the third degree, there are no voluntary movements, articulate sounds, or anything indicating the presence of ideas ; but there may be involuntary muscular contractions, or rigidity. The fourth degree is a state of absolute relaxation of the voluntary muscles, in which no contraction can be excited in them. The breathing is sometimes stertorous in this degree. The fifth degree is the state of impeded respiration observed previous to death, in animals killed by chloroform. It must be stated, that the various degrees run gradually into each other, and cannot always be clearly distinguished ; and that it is seldom necessary to carry the narcotism beyond the third degree, even in the most severe operations. The pulse is generally somewhat accellerated during the inhalation, but it is not a criterion of the action of the vapour.

The greater number of patients become quietly insensible, without offering any resistance ; but, in a considerable part of them, there is some excitement, as soon as they lose their consciousness, and is often necessary to hold their hands. A great number of female patients utter a singing sound at this stage of the inhalation. By continuing to administer the vapour the excitement is soon overcome. When voluntary motion, or talking, is no longer observed, it is desirable to examine the eye, to gain additional information as to the patient's state. If the eye be turned up, it is usually an indication that the narcotism has proceeded to the third degree, and the same is true of congestion of the vessels of the conjunctiva ; but these symptoms are not met with in every case. The degree of sensibility of the conjunctiva is a better indication whether or not an operation will cause pain, than any other sign taken alone ; but it is proper to take into consideration every symptom that can be observed. When the margin of the eyelid can be touched without causing contraction of the orbicularis muscle, or even when it causes but slight contraction, any operation can be performed without causing pain. As the effects of the vapour, unless very much diluted, continue to increase, for about twenty seconds, after the inhalation of it is discontinued, it is advisable, when the patient is nearly insensible, to intermit the vapour for two or three inspirations, now and then, or to dilute it with more air, if there be a valve for that purpose. Conducted in this way, the process of making the patient insensible usually occupies from two to three minutes ; and this is safer than proceeding more expeditiously.

After the inhalation has been discontinued, the patient spontaneously recovers from its effects. Consciousness usually returns in a few minutes—in some cases suddenly ; in others, after a short period of incoherence or

inebriation. It is not best to speak to the patient prematurely, but to quietly await the compiete return of consciousness.

London Journal of Medicine, January 1849, *p.* 52.

215.—ON THE MODE OF EXHIBITING CHLOROFORM.—By Prof. Simpson.

[The following observations are extracted from Dr. Simpson's pamphlet on anæsthetic midwifery.

Mode of exhibiting chloroform, dose, &c.—In the course of the preceding observations, I have omitted making any remarks on the degree of artificial anæsthesia required in obstetric practice, with the exception of stating that, when instrumental or operative interference is adopted, the anæsthetic state must be made adequately deep—so deep that the patient must be rendered quite passive and apathetic. In fact, when induced for operative purposes in midwifery, the anæsthetic state should be as complete and profound as when it is induced for operative purposes in surgery. But, in common cases of parturition, the anæsthetic agent employed, whether chloroform or ether, does not in general, require to be given in such large doses as in surgical practice.

The *two* main difficulties which every beginner meets with are these—namely, to keep the patient in a state unconscious of pain, and yet not so deeply anæsthetized as to have the uterine action interrupted; for too deep a state of anæsthesia in general interferes with the force and frequency of the uterine contractions while a lesser degree of the anæsthetic state leaves these contractions unaffected; and a still smaller dose often excites and increases them—the effects, in this respect, of chloroform upon the uterus, being similar to the effects of opium in different doses. But the influence of the inhaled agent passes off in a few minutes, differing in this respect from the more permanent influence of a drug when swallowed; and if, at any time, the anæsthetic effect is too deep, and the uterine action is in consequence impeded, all that is necessary is to abstain entirely from exhibiting the chloroform for a short time, till the parturient contractions have been allowed to come back to their proper degree of strength and frequency; and then the anæsthetic agency is to be sustained as before, by giving the vapour with every recurring pain, but in smaller doses, or for a shorter time during each pain, than was previously practised.

During the anæsthetic sleep which chloroform induces in natural labour, the patient usually lies perfectly quiet and passive in the intervals between the pains, but moves more or less, and sometimes moans, as each uterine contraction begins to return. In the last stage, she generally, with every recurring uterine contraction, makes the usual violent bearing down muscular efforts, and the struggle can often be marked in the expression of her face. The muscular action of the uterus and assistant muscles goes on, and yet she remains quite unconscious. The strictest quietude should always be observed and enforced around the patient; for noises and speaking, particularly soon after the chloroform is commenced, will sometimes excite and make her talk; and if this happen, we may require to exhibit to her a deeper dose than would otherwise be at all necessary.

The quantity of chloroform used varies both according to the duration of the labor, and the susceptibility of the patient. Usually when the handkerchief is used, about an ounce an hour is necessary, a small quantity being poured upon it from time to time. A less dose will suffice in some, and others require more. In one case lately, where the patient, in a first labor, was anæsthetized for two hours, I expended nearly six ounces,—large doses being necessary to keep her in a sufficiently deep state of unconsciousness. The first quantity which I pour on usually amounts to three or four drachms; but I always judge by the *effects*, not by measuring the dose; and I pour on an additional quantity in a minute or so, if it

be required. In holding the handkerchief towards the patient, I take care that plenty of atmospheric air is admitted—and seldom or never put it in contact with the face.

When exhibiting chloroform in obstetric practice, and in the way I have described, I have often been struck by the circumstance, that its use is very rarely followed by sickness or vomiting. In addition, let me state, that I have usually begun the employment of the chloroform when the os uteri was well dilated, or towards the termination of the first and the commencement of the second stage of the labour. But when the pains were severe, I have commenced it earlier, and when the os uteri was still comparatively little dilated. There is, I believe, no limit as to the date of the labour at which we may give it. (pp. 16-21.)

[Dr. Simpson and the profession generally in Edinburgh, still give the preference to the mode of administering the chloroform originally practised. In London, the simple napkin, saturated with chloroform, has been almost universally replaced by one or other of the numerous chloroform inhalers. If these latter fulfil the important conditions of admitting at will any proportion of pure air—of readily vaporizing the chloroform—and of easy and gradual application and withdrawal,—we conceive that they are better adapted for their purpose, more easy of renewed application and removal, and safer than Dr. Simpson's mode of administering with the napkin. It will be fresh in the memory of our readers, that in the greater number of the fatal cases, the patients were chloroformized with the aid of a napkin.—Ed. Med. Gaz.]

Medical Gazette, Feb. 2, 1849, p. 204.

216.—ON THE POISONOUS EFFECTS OF CHLOROFORM.—By Drs. Snow and Gibson.

[After remarking that the cases of death said to have been caused by ether could not be fairly attributed to the inhalation, Dr. Snow said:]

Chloroform was much more powerful than ether; the quantity of it required to induce insensibility was less than one-tenth as much, by measure as in the case of ether. Viewed in this manner, it was more than ten times as strong; but to ascertain their comparative physiological power when inhaled in a similar manner, their respective volatility requires to be taken into account. If a patient breathed air saturated with vapour of chloroform of 60°, twelve ordinary inspirations, of twenty-five cubic inches each, would suffice to produce the usual amount of insensibility required in a surgical operation; but it would require thirty-two similar inspirations of air saturated with vapour of ether, at the same temperature, to produce a like effect: therefore chloroform was nearly three times as strong as ether when inhaled in the same way; and this was one of the chief causes of the accidents which had happened.

When an animal was allowed to continue breathing air charged with vapour of chloroform, after it had become completely insensible, the respiration shortly ceased; but if the air did not contain about more than five per cent. of the vapour, the heart continued to pulsate for some little time after the respiration had ceased, and the circulation was finally arrested for want of the respiration, as in all other cases when death took place by apnœa. During the interval that the heart continued to beat, the animals were easily resuscitated by artificial respiration. When, however, an animal was made to breathe air containing a greater quantity of vapour—ten per cent. or upwards—death took place in from half a minute to two minutes, and the respiration and circulation ceased about the same time: the reason of this was, there was sufficient vapour in the lungs at the moment the breathing stopped to paralyze the heart as soon as it was absorbed and

added to that already in the blood. Under these circumstances, it was evident that artificial respiration could be of no avail, and there was every reason to believe that this was the condition of the patients in the greater part of the fatal cases of inhalation of chloroform. To gain a clear idea of the cause of these accidents, it was necessary to consider the quantity of chloroform in the blood and in the lungs under different circumstances. Thirty-six minims was the average quantity required to be inhaled, to induce insensibility in the adult, but only about half of this was absorbed, the remainder being expired again. He had previously related some experiments undertaken to ascertain the exact proportion of chloroform in the blood in the different degrees of narcotism, by which it was shown that about twelve minims was the quantity in the second degree—the stage in which the mind wandered and voluntary motion was unsteady; about eighteen minims in the third degree — the usual stage in which operations were performed; about twenty-four minims in the fourth degree—the stage of complete insensibility with relaxation; a little more than thirty minims, the quantity that would be required to suspend respiration; and thirty-six or thirty-seven minims to arrest the action of the heart. The quantity of air usually present in the lungs was about 250 cubic inches. If a patient were breathing air saturated with chloroform at 60°, this quantity of air would contain thirty minims before it entered the lungs; but as absorption and inhalation went on together, probably only from fifteen to twenty minims would be present in the lungs at one time during ordinary respiration; and if the chloroform were removed from the patient's mouth, part of this would be expired again, and not more than ten to fifteen minims would be absorbed into the blood after the discontinuance of the inhalation; but this, if the patient were already insensible, might so increase the narcotism as to lead to a fatal result.

The time during which the narcotism might continue to increase after the inhalation was discontinued, owing to the absorption of the vapour remaining in the lungs, was about twenty seconds, as he had stated on a former occasion. These considerations would make it evident, that unless some systematic means were taken for having the vapour largely diluted with air, so that its effects might be gradually induced in not less time than about two minutes,—and no great quantity of chloroform could ever be present in the lungs at one time,—fatal accidents would be liable to occur. Unfortunately, Dr. Simpson, to whom they were indebted for the introduction of chloroform, recommended it to be used on a handkerchief, and to this mistake must chiefly be attributed the fatal cases that have occurred; for the handkerchief, of course, did not afford any means of regulating the strength of the vapour. Dr. Snow then related the particulars of the fatal cases, which he believed were seven in number—that of Hannah Greener, near Newcastle; and that of Mrs. Simmons, of Cincinnati, which he considered was the only one in which any form of apparatus had been employed, and in that case the dentists who administered the chloroform were not medical men. The remaining cases were a young woman at Hyderabad, a female patient at Boulogne, a young man at Govan, in Scotland, a boy seventeen years old, at Lyons, and a labouring man recently, in Westminster; he did not include the deaths of two persons from taking chloroform when no one was present, as he was considering only the medical employment of the agent; and he had not included the case of Mr. Badger, who, he considered, did not die from the effects of chloroform—first, because he scarcely inhaled any, the inhaler not having been applied to his face; and, secondly, because, according to the evidence of Mr. Robinson and his servant, there were no symptoms either of narcotism or distress, even for a single second, before his death; but his head and hand dropped, and he showed no signs of life afterwards. He considered that the case was one of syncope, through fear either of the operation or of the inhalation, concerning which he had been led to entertain apprehensions, and that the

fatty degeneration of the heart under which he suffered rendered the syncope fatal. In nearly all the cases of death from chloroform, the insensibility had been induced within a minute, and in every case the dangerous symptoms set in very suddenly, proving that the vapour had been inhaled of great strength. In five cases in which an examination was made after death, there was no particular congestion of the brain, the lungs were greatly congested in two cases, and more or less so in the other three.

The cavities of the heart were quite empty in the American case, and in that at Boulogne, but in these instances strong inflation of the lungs had been practised for a considerable period after death, and Dr. Sibson had found that the heart became emptied after death, during experiments with artificial respiration in the human subject. In these two cases, air was found in the veins; in that at Boulogne, in the pulmonary as well as the systematic veins. The members of the Academie de Medicine of Paris were inclined to attribute death to this cause, supposing that air could not reach the veins by rupture of the lungs after the left ventricle had ceased to act; but if artificial respiration could empty the heart of blood, it could also press out the air which would reach the left cavities of the heart by minute ruptures of the air-cells, and pulmonary veins, and the arteries possessed the power of expelling their contents into the veins after death, as was proved by their being nearly always found quite empty. The recent case in Westmininster showed the uncertainty of the handkerchief in a striking manner, since half an ounce of chloroform was expended in the first instance, without producing insensibility, but little of it getting into the lungs; and then, two or three hours afterwards, the same gentlemen, with a similar quantity, not only induced insensibility, but unfortunately they administered an over-dose. Whilst he did not wish to blame the persons in whose hands this case has happened, and who had high authority for their method of proceeding, he could not agree in the verdict, that chloroform caused death when it was properly administered. If the vapour were sufficiently diluted with air, and its effects carefully watched, he considered it quite incapable of causing death. At the conclusion of his paper, Dr. Snow performed two experiments on linnets, to show the different effects of vapour of chloroform, according to the quantity of air with which it was diluted. In the first experiment, twelve grains of chloroform were put into a covered glass jar, containing 100 cubic inches, when it was converted into vapour, of which it would form about nine cubic inches, displacing as much air; a bird was introduced; it was quickly affected, and was dead in half a minute. The same quantity of chloroform was then diffused in a similar manner, in a jar holding 600 cubic inches, and another linnet put in; it became gradually insensible, and was removed at the end of about three minutes, and recovered completely in about two or three minutes. Dr. Snow said that the vapour required to be rather stronger than this to act as rapidly in larger animals; but that there was the same difference in its effects from a similar difference of strength.

Dr. SIBSON said that Dr. Snow had referred to his observations on the mode in which the heart was paralysed: and on the effect of artificial respiration, by distension of the lungs in emptying the cavities of the heart. It was an ascertained fact, from the history of the cases of death from chloroform, that the heart ceased to beat in those cases at the same time that breathing ceased: and in the late fatal case at Lyons, respiration continued after the cessation of the heart's action. Now the experiments of Mr. Wakely and Dr. Snow had shown that in the lower animals the heart continued to pulsate from one to two minutes after respiration had discontinued.

Whence this remarkable difference? Why is it that in man under chloroform, the heart's action should usually cease before respiration, while in the lower animals respiration should usually cease before the heart's action? This question it was difficult, but, in a therapeutical point of view,

important to answer. Opium, in poisonous doses, excited in the lower animals constant tetanic contractions; but it did not do so in man. This difference was clearly due to the superior control exercised by the brain, by the mind of man over the reflex or spinal actions, his brain having a higher development, a greater controlling power, than the brain of any lower animal. Could the sudden action of chloroform on the heart of man be accounted for, physiologically in the same way? Influenced by sudden mental depression, a woman will fall into syncope, pallid, and pulseless to the ground: the heart's action suddenly ceases under the sudden influence of the mind. A French writer has recently suggested that syncope, the sudden cessation of consciousness, may be the cause of the sudden cessation of the heart's action under chloroform. It appeared to the speaker that this view was supported by physiological analogies. Another mode in which the action of the heart might be destroyed was the production of paralysis of the heart by the immediate action of the chloroform on its fibres, the chloroform (as he had stated in a paper, from which Dr. Snow had quoted) being sent more rapidly, and in greater concentration, to the muscular fibres of the heart, than to any other part of the body, the lungs excepted. This view, which had much to recommend it, was in some measure opposed by the fact, that the heart's action continued after breathing had ceased in the lower animals. From the valuable observations of Dr. Snow, it appeared, however, that sometimes, even in the lower animals, the heart's action ceased with respiration. This, however, may be due to the *third* way in which the heart's action may be arrested by the action of chloroform. Dr. Whytt found that under the action of opium the heart ceased, the right cavities being excessively distended. On lessening the blood in the cavities, the heart resumed its action. Sir B. Brodie observed the same phenomena under the action of tobacco, and he kept up the renewed heart's action by artificial respiration. Drs. Reid, Cormack, and Lonsdale, have made similar observations in animals poisoned by creosote and prussic acid. In these cases the heart's action has not been arrested by paralysis of its muscular fibre, but by overwork; it has had more blood in it than it could send out, and more resistance to overcome, in the pulmonic capillaries (for there is resistance to the circulation in both pulmonic and systemic capillaries under the action of narcotics and of asphyxia) than it was capable of overcoming. As yet we had had no opportunity of deciding by post-mortem examination, whether the death of the heart had been occasioned in either of the two last methods, as in all the cases artificial respiration, by inflation of the lungs had been performed, and thus the blood had been expelled from the cavities of the heart. In all the cases the heart's cavities were empty or nearly so; and that this was due to the artificial inflation of the lungs, was proved by the speaker's experiments referred to by Dr. Snow. In constructing diagrams of the position of the ribs and internal viscera, he first took a diagram before the inflation of the lungs, and then another after inflating the lungs to the full, and he always found, that unless the vena cava was tied, the heart was nearly emptied by the inflation: this was due to the pressure exerted by the expanded ribs on the distended lungs, which in their turn pressed upon the heart, and which was also compressed by the sternum and the diaphragm. Dr. Sibson considered that artificial respiration by inflation was inadmissible in these cases for the reasons just stated; still less was M. Ray's plan admissible, by the alternate compression and relaxation of the chest and abdomen by a many-tailed bandage; as under the abdominal pressure the contents of the stomach would be pressed out through the cardiac orifice, ascend the œsophagus to the pharynx, and regurgitate into the larynx and trachea, the vocal cords being paralysed. He had contrived a plan of performing artificial respiration, which had been suggested to him in a case of poisoning by opium, in which Dr. Gaskell had performed artificial respiration by placing plasters over the ribs, and, through their means, by drawing upon and expanding the walls of the chest from without, somewhat on the principle of the boy's leather sucker.

The speaker had a leaden breast-plate made, with the handle; this was covered with an adhesive substance, melted caoutchouc, and was thus made to adhere to the skin over the sternum; on drawing this forward the chest was somewhat expanded, while on pressing it back, some air was expelled from the lungs; and so, by alternate suction and pressure, an artificial respiration was kept up without inflating the lungs. The amount of air so taken into the lungs was inconsiderable, but probably enough for the purpose, should artificial respiration be required for persons under the extreme action of chloroform.

Medical Gazette, April 20th, 1849, p. 688.

217.—NEW APPARATUS FOR CHLOROFORM.

Dr. Snow placed on the table, at the Westminster Medical Society, an apparatus with which he lately administered chloroform in some cases. It consisted of a hydrogen balloon holding upwards of two thousand cubic inches which was provided with a tap, and attached to a face-piece, containing valves, by means of a short and wide tube. When used, a measured quantity of chloroform was put into the balloon, which was then inflated with air by a pair of bellows; in this way the exact proportion of vapour in the air breathed by the patient was known, and the effects produced were very uniform. He found that three per cent. by measure of vapour sufficed to induce insensibility in two minutes; and this method of giving chloroform was attended with the further advantage, that the vapour was much less pungent and irritating, owing to its being uniformly mixed with the whole of the air. The expired air escaped by a valve, without returning into the balloon.

Lancet, June 2, 1849, p. 588.

218.—ON THE USE OF CHLOROFORM IN MIDWIFERY.—By Dr. W. F. Montgomery, Professor of Midwifery to the College of Physicians, Ireland.

[After stating his objections to the indiscriminate employment of anæsthetic agents in natural labour, Dr. Montgomery says:]

Now let me observe in conclusion, that while I object, and most strongly and solemnly, to the *indiscriminate* administration of chloroform in natural labour, I fully acknowledge its value and utility in general in obstetric operations, such as instrumental delivery, turning a child in utero, or the removal of a retained placenta, and also in some peculiar circumstances of natural labour, independent of any operation. Thus, I would give it in a case where the pain greatly exceeded its usual amount, and became intolerably severe. I would also use it in those cases occasionally to be met with in practice, in which a severe nervous pain is superadded to the ordinary pain of labour.

Thus, in one case, such frightful pain was endured along the course of the sciatic nerve, that I thought the lady would have lost her senses, although a woman of a steady, sensible, and strong mind, and naturally very patient. In another instance, a spasmodic pain attacked the sphincter of the rectum with such overpowering intensity and torture as to render the lady absolutely frantic. In such instances as these, I would have certainly administered this remedy, had it been known at the time of their occurrence, which, however, was before its introduction into practice.

With regard to its use in obstetric operations, while I fully acknowledge, as I have already stated, its value and utility *as a general rule*, I must add, that I think there are circumstances which should modify our *universal* adoption of it even for such purposes, lest we should for the sake of avoiding a temporary inconvenience, run the risk of entailing a more serious and permanent evil. Thus for instance, in a case of a retained placenta with hæmorrhage, and a very flabby, uncontracted, and inert uterus, I think we

should better consult the ultimate safety of the patient by omitting it, and subjecting her to the temporary suffering of passing the hand into the uterus, which would thereby be more effectually stimulated to contract, and to retain its contraction.

And again, I would say that, instead of commencing in all operations with the crotchet, by first putting the patient under the influence of chloroform, and throwing her into a state of insensibility, it would, in my judgment, be more judicious to wait, before giving it, for a reasonable time after reducing the head, to see whether the uterine energy might not be sufficient by itself to force down, and perhaps expel the diminished head, a result always most desirable, for many important reasons, and which we shall certainly be much more likely to impede than promote, by placing the patient in the first instance under the paralysing influence of chloroform.

Then again, in all such cases of instrumental delivery, we must never forget that our patient, if under the full sedative influence of chloroform, has lost all power of warning us of any accidental error which we may commit in operating, of which her pain would warn her, were she not in a state of insensibility; it, therefore, behooves us, under such circumstance, to use the utmost caution and circumspection, (at all times most necessary, but here in a far greater degree), lest, without being aware of it, we should inflict an injury which our best efforts afterwards might fail to remedy.

Dublin Quarterly Journal, May, 1849, p. 337.

[Dr. Snow, also, does not give chloroform in ordinary cases of natural labour: he recommends its use only when the labour is protracted or difficult, or when there is severe pain. He advises that a smaller dose be given than is required during a surgical operation, except in cases where we wish to stop strong uterine action, in order to turn the child. Dr. S. says:]

Chloroform should be given in midwifery, as in surgical operations, with an apparatus: or if the medical attendant be unprovided with one, he should put only from ten to fifteen minims on the handkerchief at a time. I feel obliged entirely to dissent from the practice recommended by Dr. Simpson, in the monthly Journal of Medical Science for October last, of putting three or four drachms on the handkerchief to begin with. I do not dispute that he has tact enough to practice this plan without accident, but I feel sure that it will lead to fatal results in other hands.

I also disapprove of his practice of handing over the handkerchiefs afterwards to the husband or nurse. This method of administering chloroform is also objectionable from the quantity of vapour that becomes diffused through the air of the room; and from Dr. Simpson's account of the quantity employed, it must cost a shilling an hour more than the plan I employ. This I mention, merely to show that dispensing with the use of an apparatus is not a saving.

When the first stage of labor is tedious and painful, and the patient wearied and desponding, the greatest relief may often be afforded without altogether removing consciousness; and whilst the uterine contractions are not powerful, it is best to give but a very small quantity of chloroform, or they become suspended, which, however, is of no great consequence, as they soon return. The best way of administering the vapour, is to let the patient inhale a little at the beginning of each pain. Commencing with the inhalation early in labour, does not entail a necessity of continuing it throughout; for the patient, knowing that she can have occasional relief, often bears the pain more cheerfully. And after the chloroform is discontinued, it exerts sufficient influence, for a time, to counteract the persistent uneasiness there often is between the pains, and thus to enable the patient to have short periods of refreshing sleep.

When the pains are stronger, rather more chloroform can be given, without retarding the progress of the labour, but the effect of it should not ex-

ceed the second degree; and except in obstetric operations, the usual symptoms of labour ought to continue.

The object should be only to prevent the patient's suffering by making her unconscious; and whilst articulate complaints and loud cries are prevented, to allow the reflex or instinctive auxiliary action of the respiratory, and even voluntary muscles to continue, accompanied, perhaps, with some moaning. I believe that, with a little management, chloroform may generally be administered without retarding the labour; and in cases rendered tedious by rigidity of the os uteri, or obstructed by an unyielding state of the perineum, chloroform shortens the duration of labour very much, by causing the relaxation of these parts. There are instances, also, in which a moderate exhibition of the vapour seems to strengthen the reflex bearing-down efforts, which had probably been diminished by fear of the pain.

London Journal of Medicine, Jan. 1849, *p.* 54.

219.—ON COMMON COAL GAS AND DUTCH OIL AS ANÆSTHETICS.—By Thomas Nunneley, Esq., Leeds.

[Mr. Nunnely, who has been long engaged in experiments with different anæsthetic agents, has, in common with Dr. Simpson, found *common coal gas* to be a safe, manageable, and effective anæsthetic, and not difficult to inhale. But the substance which he recommends as better than chloroform is:]

The *chloride of olefiant gas* as named in "Fownes' Manual"; the hydrochlorate of *chloride of acetyle, or oil of olefiant gas*, in the eighth edition of "Turner's Chemistry"; and formerly called *Dutch oil, or oil of the Dutch chemists*. In appearance and smell it is not very dissimilar from chloroform, but in composition it differs most materially: chloroform being composed of *two* atoms of carbon, *one* of hydrogen, and *three* of chlorine, with a boiling, point of 140°, the specific gravity of the liquid being 1·480, of the vapour 4·2; while the chloride of olefiant gas is composed of *four* atoms of carbon *four* of hydrogen, and *two* of chlorine: its boiling point is 180°, the specific gravity of the liquid 1·247, of the vapour 3·4484,—constituting differences which are very important, and sufficient, I believe, to explain the facts of its superiority. *Medical Gazette, Feb.* 23, 1849, *p.* 347.

[It appears that in the hands of both Dr. Snow and Dr. Simpson, Dutch oil did not give encouraging results; the vapour appearing to be of an irritating quality. Mr. Nunneley says, however:]

I find it to be the least irritating of any anæsthetic agents which I have tried, and further investigation justifies me in repeating all I have said in my notice of it. I have tried it upon many dogs and cats, young and old, in large and small doses; in no one instance have I seen any irritation caused by it, nor any repugnance to its inhalation. The animal quickly and pleasantly passes into a profound state of insensibility, and remains so. As I stated, a more death-like condition is recovered from than after chloroform, and in every instance the animals have quickly rallied and remained well, except in one where I intentionally destroyed it to observe the *post mortem* appearances. Having ascertained the effects upon animals, I inhaled it myself, and found the action not only not disagreeable, but perfectly agreeable in every respect. My assistant, Mr. Beaumont has taken it once, and my pupil, Mr. Moorhouse, has taken it twice, on two successive evenings: both were rendered as insensible as is either necessary or safe for the performance of any operation whatever, or by whatever agent induced. In neither was there the least irritation; in fact both begged for more before becoming insensible, and when rallying from this condition; and both were immediately well. The latter of the two, who has three times inhaled chloroform, declares the effect of the Dutch oil, both at the time of inhaling and subsequently, to be far more pleasant than

that of chloroform. I last night gave the Dutch oil to four gentlemen; in all it answered admirably, all had previously taken chloroform, and they were unanimous in declaring the oil to be more effectual, pleasant, and speedy, with less uncomfortable feelings afterwards.

Prov. Med. and Sur. Jour., March 7, 1849, *p.* 138.

[The following were the first cases in which the Dutch oil was administered to patients by Mr. Nunneley:]

The first was a case of exceedingly rigid os uteri, in a very delicate woman, with a troublesome cough, and very œdematous legs, but with a pelvis well formed. For three hours, the pains being strong, and very little dilatation produced, twenty minims of the fluid were put upon a handkerchief, and at intervals of five minutes, ten minims were put upon it twice; in all, 40 minims. Almost *instantly* dilatation began, and in fifteen minutes the child was born. The lady was not rendered completely unconscious, (which, I believe, to be very rarely necessary, and always, if possible, to be avoided in midwifery,) but was very happy, forgot her sufferings, and began to tell that which was uppermost in her mind.

The three following were patients in the Leeds Infirmary, and I am indebted to the kindness of my friends, Messrs. Smith, Hey, and Teale, for the opportunity of giving it to them.

The first was a man, 55 years of age, who had had for some years so great contraction of the adductor muscles of both thighs, as almost to fix the extremities. Forty minims were given upon a cloth, not held at first very close over the face. Before becoming unconscious he muttered and moved a little. Twenty minims more were given, when he became perfectly unconscious, with relaxation of the muscles. This was kept up by another twenty minims, which had the effect of continuing the anæsthesia. During the time forcible abduction was gradually made, with considerable improvement to the power of separating the legs. Eighty minims were given in all.

The next was a woman, aged 42, in whom a small malignant tumour was removed from the side. Forty minims were given, which at once put her into a complete condition of anæsthesia, without uttering a word or moving at all.

The third patient was a boy, 15 years old, who, for malformation of the lower extremities, had the inner hamstring muscle of both legs divided. He had thirty minims given at first, then twenty, and afterwards ten, in all, sixty. He was not so quiet as the woman, but altogether unconscious, even when put to bed, although the operation and dressing, &c., necessarily occupied some time.

In none of these four cases was the least irritation or cough produced, and neither at the time, nor afterward, was there any unpleasant symptoms of any kind. I need not mention that a much larger quantity of chloroform would have been required to produce a similar condition, and would only further add, that I believe the little uneasiness witnessed in the man before passing into a state of complete anæsthesia, arose from the quantity of Dutch oil given not being quite sufficient; but until the exact effect of it was known, I preferred giving too little rather than too much.

Prov. Med. and Sur. Jour., March 21, 1849, *p.* 166.

[We have only space left to refer to the forthcoming volume of the Provincial Medical and Surgical Transactions, in which will be found a most learned and elaborate paper of above two hundred pages, and describing above five hundred experiments on the action of anæsthetic agents, in which Mr. Nunneley has attempted to explain their modus operandi. But the nature and extent of his inquiries will be best shown by referring to the queries with which he commences his essay. These questions are to the following effect:—

1. Are there not many moreubst sances of anæsthetic powers than have hitherto been observed, and is there any chemical relation between them?

2. What is their modus operandi?
3. Is there any one of them which we ought to select in preference to others?
4. Is there any essential difference in the action of these substances according to the mode in which they are administered?
5. Are there any symptoms by which we may accurately judge of their effects?
6. In case of an overdose, are there any means which can be employed to counteract the effects?

We shall look with great interest to the publication of this valuable essay, the proof sheets of which we have already seen. It appears to us to be the most complete analysis of the question which has ever yet been spread before the profession, and which in our next part we hope to abstract with care.]

220.—USE OF GLYCERINE IN DEAFNESS.—By Dr. Turnbull.

[Some time ago, Mr. Yearsley published an account of deafness arising from deficiency of the membrana tympani, being relieved by the introduction of a bit of moistened cotton wool into the orifice. Dr. Turnbull suggests that the cotton wool should be moistened with glycerine; when moistened only with water, he says that it requires to be renewed daily:

This great inconvenience I have found is much done away with by the wool being moistened with glycerine alone, or diluted with water. The glycerine possesses the peculiar property of attracting moisture from the air, and keeping the wool moist for a length of time, thereby rendering it unnecessary to have it frequently changed.

Another method that I have practised in cases of fracture or perforated tympanum for the last ten years, and I think with great benefit, it by dropping ten drops of glycerine into the ear, or a solution of glycerine and water of equal quantities, causing the patients to lay their heads down on the contrary side for the space of about five minutes; and two or three times when in this position, causing the patient to make a forcible pressure of air against the cheek, at the same time compressing the nose with the fingers. The air will then be forced out of the ear through the eustachian tube, and all that is required in general is to repeat this as often as the deafness shall return. I have had some cases that did not require a second application for several months. One case was a barrister from Edinburgh, who consulted me in 1839, and who previously was enabled to carry on his profession as a barrister by filling a small quill with saliva, and when he became deaf, pressing it gently into the meatus, leaving the fluid. By this means he established a tolerable state of hearing. Other cases, previous to my becoming acquainted with the utility of glycerine, were benefited by warm oil of almonds instead of glycerine.

I would desire to add, that in all cases of deafness, hearing will be generally obtainable to a considerable extent, when the patient is capable of hearing distinctly a watch when pressed upon the temporal bones. The application of glycerine, I have confined to cases of fractured tympanum, but it will be found a most valuable medicine for the protection of the membrana tympani, &c., from the air in almost all cases where there is a deficiency of ceruminous discharge. *Medical Gazette, June* 1, 1849, p. 968.

SYNOPSIS,

CONTAINING

A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOREGOING PAGES OF THIS VOLUME: AND SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF-YEAR (ARRANGED ALPHABETICALLY.)

DISEASES AFFECTING THE SYSTEM GENERALLY.

ANÆMIA.—In treating anæmia and its secondary disorders, first ascertain the exciting cause; and having arrested or removed this, give the preparations of iron freely, and for a great length of time, with a liberal allowance of animal food, and porter or ale, in preference to wine. Recommend also change of air, and travelling. (Dr. J. Begbie, p. 40.)

DROPSY.—Give the fresh juice of the root of the common elder, as a drastic purgative. (M. Vanoye, p. 28.)

Acute Inflammatory.—Apply leeches, or cup from the loins, and let the patient use the hot-air or warm bath. Give purgatives, especially such as cause watery evacuations: sudorifics, as liq. ammon. acet. in doses of half-an-ounce twice or thrice a day; and diuretics, as cream of tartar in doses of half-a-drachm or a drachm frequently during the day. Digitalis may be given, with due precautions, as may also decoction of broom; but irritating diuretics must be avoided. Mercury is unnecessary and injurious. (Dr. R. B. Todd, p. 29.)

Following Scarlatina.—Give a warm bath every other day, or every day, or twice a day if it does not depress too much; and give hydragogue purgatives, and unirritating diuretics, such as bitartrate of potash or liq. ammon. acet., especially the former. At the same time give nourishing food in such quantites as the patient can digest; or even stimulants,—port wine, for instance. If under this treatment the affection does not yield in a few days, and especially if there is lithic acid or blood in the urine, take a little blood from the loins by leeching or cupping. If symptoms of head affection come on, apply free counter-irritation to the nape or scalp, by means of sinapisms followed by blisters. (Dr. R. B. Todd, p. 20.)

As prophylactic measures, be careful that patients convalescent from scarlatina, especially if they are scrofulous, wear flannel clothing, and have mild but nutritious diet; and that they avoid exposure to chills and wet for a long time after desquamation has taken place. (Dr. J. R. Gormack, p. 302.)

PURPURA HEMORRHAGICA.—Give nitrate of potash in doses of ten grains or a scruple with the same quantity of sugar, dissolved in cold water, every two or three hours; let the diet be as light as possible; and give a purgative of rhubarb and carbonate of soda occasionally. As convalescence progresses, substitute carbonate of soda with camphor mixture for the nitrate of potash; and gradually improve the diet. (Dr. C. Carlyon, p. 37.)

RHEUMATISM. *Acute Articular.*—Give one, two, or three ounces of nitrate of potash, dissolved in two quarts of water, every day. And apply to the affected joints a piece of spongio-piline with nitrate of potash in powder sprinkled freely upon its moistened surface. Dr. W. R. Basham, p. 31.)

Chronic.—Besides constitutional treatment, apply to the affected parts a piece of spongio-piline which has had its moistened surface freely sprinkled with powdered iodide of potassium. (Dr. W. R. Basham, p. 31.)

Muscular.—When it affects the muscles of the head, the best remedy is the cyanide of potassium applied externally. When the cervical region is the part affected, the most successful means are sea-bathing, cold affusion, cupping, and acupuncture. (M. Valleix, p. 33.)

Rheumatic Gout.—After administering a purgative, give half-ounce doses of lemon-juice thrice a day. (Dr. G. O. Rees, p. 30.)

Scarlatina.—During convalescence from scarlatina, let the body be clothed in flannel, let the diet be mild but nutritious, and let exposure to chills or wet be most carefully avoided, not only till desquamation from the skin and tubuli uriniferi has ceased, but until the system has regained its wonted tone. These precautions are especially necessary in scrofulous children. (Dr. J. R. Cormack, p. 302.)

℞ Scurvy.—Give nitrate of potash in ten grain or scruple doses every two or three hours. See "*Purpura*," (Dr. C. Carlyon, p. 38.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Apoplexy, *Simulated.*—When symptoms simulating those of apoplexy arise from mere cerebral irritation, or from anæmia, treat them (after removing the cause, when practicable,) by giving tonics and especially chalybeates, with good diet. Let the patient take moderate open-air exercise, and use such purgatives as will secure gentle and regular action of the bowels. In extreme cases even give stimulants. When the symptoms are of *doubtful* origin, blister and purge for a few days, at the same time allowing a generous diet, until the exact nature of the disease is ascertained. (Dr. H. M. Hughes, p. 52.)

Chorea.—Do not be misled by the urgency of the symptoms into the adoption of depressing treatment. But after correcting the secretions by the use of purgatives, let the cold bath be freely and frequently used, and give nourishing diet, with chalybeates, quinine, and metallic tonics. If, after the cessation of the spasmodic movements, paralysis or debility of the muscles remains, apply galvanism. (Dr. R. B. Todd, p. 66.)

Epilepsy.—The indications are to remove all sources of irritation; to promote nutrition and a general healthy state of both body and mind; and to prevent the access of the fits so as to break the habit of periodical recurrence. For the latter purpose administer chloroform once, twice, or thrice a day, so as to produce its full effect, taking, of course, all precautions in its administration. Or give valerian or the valerianates, or the juice of cotyledon umbilicus. During the fit, adopt no treatment beyond using such means as will preserve the patient from injury. (Dr. R. B. Todd, p. 283.)

Give an ounce of the expressed juice of the *cotyledon umbilicus*, or half a drachm of Hooper's inspissated juice, twice a day, and continue its administration for a length of time. (Mr. T. Salter, p. 56.)

Give the juice of cotyledon umbilicus, or five-grain doses of an extract prepared from it, twice or thrice a day, for a considerable period. But, if the secretions are out of order, before commencing the use of this remedy give a course of gentle aperients. If the patients are boys or children, and otherwise healthy, commence by giving a few brisk doses of calomel and scammony, followed by castor oil; and if they are young men, attend to the state of the urethra, and relieve irritability of this part by the use of the bougie. (Dr. J. Bullar, p. 294.)

Neuralgia.—Rub in fifteen or twenty drops of chloroform, and repeat the application if necessary. (M. Leriche, p 67.)

Paralysis, *Facial*.—In paralytic affections of the facial muscles, when the antagonist muscles distort the features, the distortion may be remedied by the application of collodion; the parts being adjusted to their normal position before the solution is applied, and being held in that position with the finger until the solution is dry. (Mr. J. Startin, p. 397.)

Paraplegia.—The alkaline and phosphatic condition of the urine may be remedied by the administration of benzoic acid in large doses,—two scruples four times a day. (Dr. A. B. Garrod, p. 28.)

Sciatica, *Chronic.*—Where all the usual remedies have failed, electro-galvanism may be safely recommended with every chance of success. (Dr. E. W. Tuson, p. 308.)

In severe cases, put the patient under the influence of chloroform, and with a red-hot iron make an eschar along the outer part of the dorsum of the foot. (M. Robert, p. 306.)

Tetanus.—The indications are, first, to support the strength by avoiding all over depletion, by giving nutriment and stimulants in small quantities frequently repeated, and by administering freely such medicines as quinine, iron, or ammonia; secondly to remove all ascertainable sources of irritation by acting upon all the secretions in a gentle manner; and thirdly, to attempt to reduce the exalted polarity of the spinal cord. Of the remedies generally used for the latter purpose, some are inefficacious and some unsafe; but there are two which ought to be fairly tried. The first is cold, employed by the application of ice contained in ox gullets, to the spine; the bladder must be very frequently renewed, so that a decided effect may be obtained, and yet care must be taken that too much depression is not caused. The second agent is *chloroform*, which may be exhibited three or four times in the day, great diligence being exercised in the meantime in the use of means to uphold the strength. (Dr. R. B. Todd, p. 295.)

Trismus Nascentium.—Employ frequent and copious affusion of cold water, especially over the back, and after each affusion rub the child dry as quickly as possible, and wrap it in warm blankets. At the same time attend to the quality of the food, and the temperature and ventilation of the apartment; and endeavour to regulate the bowels. There is, usually, however, but little time for these measures. (Dr. R. B. Todd, p. 295.)

Toothache.—Apply a minute portion of arsenic, not exceeding the twentieth part of a grain, in combination with creasote and muriate of morphia, on a little cotton wool, to the sensitive portion of the tooth, and retain it *in situ* for twenty-four hours, by softened wax. Then clear away the dead dentine, lay open the pulp cavity, and remove the pulp; if the operation gives any pain, desist from it, and renew the arsenical application until the following day. When the pulp and carious dentine have been removed, plug the tooth in the usual way. If there is a discharge from the pulp cavity, after subduing the tenderness by the arsenical application, and before proceeding to plug the tooth, get the condition of the pulp cavity which gives rise to this secretion relieved by the daily injection of a solution of alum or of nitrate of silver. In the still more advanced stages of toothache, hardly anything but extraction will do good. (Mr. C. Stokes, p. 323.)

Dissolve a little gum-mastic in chloroform, so as to thicken the fluid, and then apply it to the tooth on a little cotton wool. (Mr. Tomes, p. 67.)

Let the mouth be first cleansed with warm water containing a little carbonate of soda; then remove any foreign body from the cavity, dry it, and drop into it from a point, collodion in which morphia has been dissolved, fill the cavity with asbestos, and saturate this with collodion; lastly, place over it a pledget of bibulous paper. By occasionally renewing this application, a more durable stopping with gold may at last be effected. (Mr. J. Robinson, p. 324.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Asphyxia *Neonatorum.*—First immerse the child in warm water, and upon withdrawing it, cover the chest with a cloth or sponge soaked in very cold water; again immerse it in warm water, and again apply cold, and go on

alternating them until the respiration becomes established. (Mr. J. O. Fletcher, p. 275).

Asthma, *Spasmodic.*—Let chloroform be inhaled during the paroxysm, so as to produce a moderate degree of anæsthesia, when the breathing will become easier. (Messrs. Beardsall, Chandler, Greenhalgh, and Leriche, p. 91)

Bronchitis, *Chronic.*—The administration of the seeds of phellandrium aquaticum is very useful; especially in the bronchitis of young lymphatic subjects, and of old people. (M. Sandras, p. 89.)

Croup, *Membranous.*—Besides giving calomel, apply solution of nitrate of silver, forty or sixty grains to the ounce, to the interior of the larynx, by means of a piece of sponge cut into a conical form, and firmly fastened to a curved piece of whalebone. (Dr. J. Bryan, p. 301.)

Spasmodic.—See "*Laryngismus.*"

Diphtheritis.—In diphtherite or laryngeal croup, tracheotomy is applicable, as the false membrane does not extend below the larynx. The operation should be performed early, before the patient becomes exhausted. (Mr. H. Smith, p. 153.)

Hiccup.—Let chloroform be inhaled. (M. Lateur, p. 68.)

Laryngismus Stridulus.—Give purgatives to remove accumulations or morbid secretions from the bowels. Lance the gums freely when they are swollen and inflamed, *but not otherwise.* Let the child be fed slowly, at short intervals, and with food of good quality. Dash a pitcher of cold water *suddenly* upon the back and shoulders, night and morning. And let the child be lightly, though sufficiently, clad, and taken into country air, if possible. During the paroxysm or, when it is impending, dash cold water rapidly and liberally into the face. (Dr. R. B. Todd, p. 295.)

Phthisis Pulmonalis.—The administration of pure and fresh cod-liver oil, as free from taste and smell as it can be procured, is of the greatest advantage. Give it in doses of a teaspoonful (gradually increased to a tablespoonful, if the stomach will bear it), one or two hours after the first three meals of the day, using as a vehicle any pleasant flavoured fluid, such as orange wine, or infus. aurant. comp., with a little tinct. and syr. aurantii or with a little diluted nitric acid. (Dr. C. J. B. Williams, p. 81.)

The indications are, to neutralize the morbid poison which exists in the blood, or to procure its elimination; to restore the function of nutrition to a healthy state; to check undue local excitement; and to support the strength of the system. Amongst medicines, cod-liver oil is well worthy of confidence; and in acute cases, mercury, which should be given with salines, especially nitrate of potash, and followed up by tonics. (Dr. W. H. Madden, p. 78.)

The respiration of air containing a good deal of carbonic acid gas, which was produced by burning charcoal in a brazier in a damp room, has been of great service. (Dr. Sokslow, &c., p. 89.)

The seeds of phellandrium aquaticum are of great use as a palliative. (M. Sandras, p. 89)

Trachea, *Foreign Bodies in the.*—If the body moves freely up and down in the tube, do not interfere with it, but keep the patient perfectly quiet in bed or on a sofa, and advise him to avoid all effort to expectorate. If these directions are followed, the foreign body will no doubt soon be expelled. (Mr. J. P. Vincent, p 157.) See also "*Tracheotomy.*"

Tracheotomy.—Tracheotomy is applicable in cases of laryngeal croup or diphtherite, and should be performed at an early period of the disease, before the powers of the patient are exhausted. (Mr. H. Smith, p. 153.)

In cases of acute affections of the larynx in *adults*, when an opening into the air-passage is needed, perform laryngotomy rather than tracheotomy: Perform laryngotomy also in those cases in *children*, in which the obstruction has been occasioned by swallowing boiling water or other irritating fluids. (Mr. Prescott Hewett, p. 148.)

When tracheotomy has been performed for the extraction of a foreign

body from the larynx, use a pair of forceps of considerable curvature, the last one-and-a-half or two inches forming little more than a right angle with the remainder of the blade. If the patient is young, and there is any difficulty in the extraction, divide the cricoid cartilage, and, if necessary, the crico-thyroid membrane. In the case of *children*, when we require an opening either for the extraction of a foreign body from the larynx, or trachea, or on account of disease of the larynx, or accidents with boiling water, it may be advisable, instead of the usual operation, to divide the crico-thyroid ligament, the cricoid cartilage, and the uppermost rings of the trachea; and if requisite to slice out a portion of the two latter structures. (Dr. T. G. Geoghegan, p. 154.)

In performing tracheotomy, make an incision through the integuments *only*, and push aside the other tissues, down to the trachea, with an eye-probe or a pair of forceps. (Dr. M. Hall, p. 151.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Aneurism.—In the treatment of aneurism by compression, it is recommended to use straps of vulcanized india-rubber, as the compressing medium. (Dr. Carte, p.)

Arteries. *Wounds of.*—See "*Hemorrhage.*"

Epistaxis.—Give ten drops of oil of turpentine in a draught, every two or three hours. (John Hunter, p. 72.)

Give a few doses of infusion of matico. (Mr. J. H. Horne, p. 144.)

Keep the parts which are bleeding free from all coagulum, by syringing the nostrils repeatedly with *warm* water, until the bleeding cases. It will not afterwards recur. (Mr. J. P. Vincent, p. 144.)

A method of plugging the nostrils by means of a simple instrument, extemporaneously prepared from a piece of the wire of wire-ribbon, is described by (Dr. C. Edwards, p. 147.)

Heart, *Polypus of the.*—When polypous concretions in the heart can be diagonised during life, it has been recommended to attempt their solution, by administering substances supposed to render the blood more fluid. But any such attempt is quite futile. (Dr. O'B. Bellingham, p. 68.)

Hemorrhage.—Oil of turpentine is one of the very best styptics, either externally applied, or given internally. (John Hunter, p. 74, Mr. J. P. Vincent p, 143.)

The best internal styptic is gallic acid, which may be given without fear, in doses of five grains two or three times a day, or even more, suspended in mucilage, or made into a pill. It is well to remember, however, that it constipates the bowels. (Dr. R. B. Todd, p. 99.)

The internal administration of infusion of matico, is recommended as the best remedy in cases of hemorrhage. (Mr. J. H. Horne, p. 144.)

Passive.—Give nitrate of potash in doses of ten grains or a scruple with an equal quantity of sugar, dissolved in cold water, every two or three hours. (Dr. C. Carlyon, p. 37.)

From Wounded Arteries.—When the bleeding cannot be restrained by moderate compression on the trunk of the vessel, and perhaps on the injured part, apply a ligature to both the ends of the divided artery, or, if the artery is not completely divided, one above and one below the wound. (The search for the lower end of the divided artery will be facilitated by remembering that the blood flows from it in a continued stream, and is, in the lower extremity, of a dark colour.) If the lower end of the vessel cannot be found, try compression upon the track of the artery below the wound; but if this fails to arrest the bleeding, expose the vessel and tie it as near to the wound as practicable. (Mr. G. J. Guthrie, p. 135.)

Bleeding from the superficialis volæ and the superficial palmar arch, may be quite restrained by placing a small hard pad of lint immediately upon the bleeding orifice, and then, taking advantage of the elasticity of

the integument, drawing a strip of adhesive tightly over it. (Mr. J. P. Vincent, p. 144.)

In cases of secondary hemorrhage, where the parts are covered by granulations which conceal the bleeding point, and break down under the forceps,—where there is an inflamed and sloughy condition of the parts, and the patient is so enfeebled by previous hemorrhage that further loss of blood would be fatal;—and where uncontrollable arterial hemorrhage occurs in a case of compound fracture which is in other respects likely to do well,—pass a ligature round the main artery where it is in a healthy state. (Mr. Critchett, p. 137.)

In all cases of external hemorrhage the most important point is to keep the parts *free from all coagulum.* (Mr. J. P. Vincent, p. 142.)

After the Extraction of Teeth.—Keep the socket quite free from coagulum, and apply oil of turpentine. Give this medicine also internally, if the cessation of the bleeding should not render this unnecessary. (Mr. J. P. Vincent, p. 144.)

Give a few doses of infusion of matico. (Mr. J. H. Horne, p. 144.)

From Leech bites.—Roll a small piece of lint into a hard knot, less than a pea, and wiping the orifice clean of blood, place this little pad upon it; then, taking advantage of the elasticity of the integuments, draw a strip of adhesive tightly over it. (Mr. J. P. Vincent, p. 144.)

Dip some of the flocculent portion of lint in collodion, and press it on the orifice, and then apply collodion freely over the whole surface. (Mr. Tucker, p. 144.) As an improvement upon this plan, after applying the compress to the orifice, cover it with a little disc of thin paper, and make pressure upon it with the end of a pencil or pencil case. (Mr. E. Wilson, p. 144.)

Ligature *of the Subclavian.*—In performing the operation of tying the subclavian artery internal to the scaleni muscles, after exposing the vessel and encircling it with the ligature in the usual way, carefully saw through the clavicle at its middle, taking care to guard the subjacent parts with a spatula. The intention of this is to allow of the approximation of the shoulder to the trunk, that there may be no tension upon the artery. (Dr. W. Hargrave, p. 146.)

Varicose Veins.—Instead of a laced stocking, let the patient wear a *garter* of vulcanized India-rubber a little below the knee. (Dr. Hargrave, p. 146.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

Cholera, *Infantile.*—Give the sweetened infusion of coffee, in frequently repeated doses; the strength of the infusion being so regulated, that from half a scruple to two scruples of coffee shall be used daily. (Dr. Pickford. p. 94.)

Colica Pictonum.—Give alum, in doses of fifteen grains every two hours. It should be reduced to an impalpable powder, and made into an electuary with treacle. (Sir J. Murray, p. 314.)

Diarrhœa.—In cases where there is much pain and mucous discharge, dependent upon a relaxed condition of the mucous membrane, give five or ten grains of the "bisulphate of iron and alumina" every two or three hours, dissolved in any aromatic water. (Sir J. Murray, p. 313.)

From Exhaustion.—In pauper patients and especially children, nux vomica is very useful. Use the following prescription (for adults): Alcoholic extract of nux vomica, gr. ss.; rhubarb, gr. ss. saccharated carbonate of iron, gri; blue pill, gr. ss.; made into a pill, with or without opium, gr. ℈; and taken thrice a day. (Dr. Nevins, p. 95.)

Dysentery, *Acute.*—In young and vigorous subjects, bleed from the arm at an early period of the disease; in other persons apply leeches repeatedly to the verge of the anus. In both cases give mercury, until fæcal matter appears in quantity in the stools, and there is relief to the general symptoms, or until the gums have been fairly affected; it may be given in combination

with Dover's powder, which will relieve pain. When the mercury has made a decided impression upon the disease, or when it has affected the gums *without* relieving the distress or improving the stools, as also in cases where it is inadmissible, give alkalies. If there is a tendency to scybalous stools after the active symptoms have subsided, give a draught containing one drachm of castor oil with twenty drops of oil of turpentine, every three or four hours, till the bowels are unloaded; and at the same time use astringent injections containing acetate of lead. When a relapse occurs, give oil of turpentine. (Dr. R. Mayne, p. 304.)

DYSPEPSIA.—A most excellent aromatic bitter is copalchi bark, which may be given in doses of a tablespoonful of the infusion (cort. copalchi ℥ss.; aq. fervent. Oj.;) thrice daily. (Dr. J. Stark p. 310.)

When there is pyrosis, an excellent medicine is the new salt, "bisulphate of iron and alumina," given in doses of five or ten grains, dissolved in any aromatic water. (Sir J. Murray p. 312.)

In cases described as "catarrh of the stomach" in which there is much vomiting of viscid ropy mucus, give alum, in doses of ten or twelve grains three or four times a day. It must be reduced to an impalpable powder, and made up into an electuary with treacle and a little powdered ginger. A little supertartrate of potash may be added, if constipation is produced by the alum, (Sir J. Murray, p. 312.)

HARELIP.—Operate as early as possible after birth. (Drs. M. Warren and Anselm, and MM. Guersant and Paul Dubois, 158.)

It is unsafe to operate before weaning. (Mr. B. Cooper, p. 158.)

Use very fine insect pins, and after twenty-four hours take the threads from off the pins, and replace them by others less tightly drawn. It is unnecessary to detach the lip from the gum. (M. Paul Dubois, p. 158.)

Use sutures, instead of pins to unite the edges, and introduce them by means of straight needles. (Dr. M. Warren, p. 158.)

The uninterrupted suture is probably the best mode of uniting the cut surfaces. Mr. B. Cooper, p. 158.)

Apply collodion as a dressing. (pp. 316, 320.)

Double.—Operate on one side first, and allow a month to elapse before the second operation. (Dr. M. Warren, p. 158.)

HERNIA.—It is recommended to have the springs of trusses made of "galvanized iron." (Dr. T. Stratton, p. 169.)

To prevent or heal excoriation from trusses, apply collodion. (Mr. J. Startin, p. 321.)

Obstructed.—In cases of "obstructed" hernia (an old irreducible hernia in a flaccid and painless state, with vomiting and obstinate constipation, and the vital powers of the patient low, cut down upon the tumour, without delay, and relieve the incarcerated bowel, if necessary, by breaking up adhesions; and give the patient stimuli. (Mr. J. Gay, p. 166.)

HÆMATEMESIS, *Vicarious.*—When hæmatemesis occurs in a man from suppressed hemorrhoidal discharges, give a hot hip-bath, and stimulant suppositories or injections; when in a woman from suppressed menses, foment the pudenda and give emmenagogues; and in either case, if the patient be plethoric bleed from the hand or foot. At the same time apply bladders of ice to the epigastrium, and administer ice, or cold or iced water, or a small tea-cupful of alum whey, (two drachms of alum in a pint of whey.) Or give a pill containing three or four grains of alum, and two or three of dragon's blood, about every two hours. And prevent the recurrence of the disease by attention to its cause. (Dr. R. Dick, p. 95.)

HEMORRHOIDS, *Internal.*—Do not use ligatures. Excise the piles, and then inject solution of sulphate of iron, one grain to the ounce, which will arrest the bleeding. (Mr. J. P. Vincent, p. 170.)

ILEUS.—In cases of intestinal obstruction, when the constipation is complete and there is fæcal vomiting, and these symptoms are not relieved by the use of ordinary means, for three or four days, it is justifiable to resort

to operation. If there are satisfactory indications of the seat of the obstruction, make the incision at or near that point, but if there is much doubt, make it in the median line. If the cause of the obstruction cannot be removed, or it is deemed imprudent to make an extended search for it, make an artificial anus as near as may be to the seat of obstruction. (Mr. B. Phillips, p. 169.)

Prolapsus Ani.—Inject solution of sulphate of iron, one grain to the ounce. If this injection is regularly employed for a few weeks, it will probably be unnecessary to resort to operation. (Mr. J. P. Vincent, p. 170.)

Tonsils, *Enlarged*.—Do not excise them; but give small doses of bichloride of mercury and colchicum, or the latter medicine with guaiacum. When tonsils are enlarged in childhood they will generally assume their natural size at puberty. (Mr. Harvey, p. 160.)

Vomiting.—In obstinate vomiting, try the new salt "bisulphate of iron and alumina," given in doses of five or ten grains, every two or three hours. (Sir. J. Murray, p. 312)

AFFECTIONS OF THE URINARY ORGANS, VENEREAL DISEASES, &c.

Albuminuria.—Amongst the purgatives to be used in this disease, the best are—croton oil, which is preferable to elaterium; sulphate of magnesia in rather a *concentrated* solution; and cream of tartar in full doses. Of tonics, chalybeates are the best, and the most suitable of them is tinct. ferri mur. (Dr. J. D. Heaton, p. 110.)

Albumen may often be found in the urine of scrofulous children, during the various diseases to which they are liable; but it will frequently disappear after the exhibition of a smart purgative. (Dr. J. R. Cormack, p. 303.)

Bubo, *Creeping*.—In this form of bubo, a mercurial treatment is almost invariably required. We must give mercury steadily, until it disagrees with the system; then abstain from it, and give tonics; and after waiting a few weeks, or even months, again return to the use of the mercurial preparations. (Mr. S. Solly, p. 195.)

Diabetes.—As a good kind of non-amylaceous food, give bread made of potato-flour freed from starch, instead of wheat flour. [A formula is given in the body of the work.] (Dr. J. Percy, p. 112.)

Excoriation *of the Glans Penis*.—Apply collodion. (Mr. E. Wilson, p. 317.)

Gonorrhœa.—Give from twenty-five to thirty drops of vinum colchici three times a day, combined with tinct. opii; enjoining at the same time a low diet, the warm bath, and other like remedies. (Dr. Ficinus, p. 186.)

When severe pains remain in the course of the urethra, after all traces of the discharge have ceased, treat them by applying compression to the penis, as firmly as possible, without interfering with micturition. Apply this compression either by one strip of adhesive, two-fifths of an inch broad, rolled circularly round the penis, like a bandage, beginning at the glans; or by a number of small strips, the two extremities of each strip crossing upon the urethra. (M. Vidal, p. 187.)

Hæmatocele.—Lay open the cavity of the tunica vaginalis, and turn out the coagulum. (Mr. B. Cooper, p. 174.)

Hæmaturia.—When it arises from *irritation of the kidneys* by morbid matter as lithic acid, endeavour to relieve these organs, by acting on the skin and bowels by purgatives and diaphoretics; apply counter-irritation by means of mustard,—not turpentine or cantharides; and if the patient is plethoric, even take a small quantity of blood by cupping.

In that form arising from *inflammatory renal dropsy*, endeavour to restore the action of the skin by the use of the hot air bath, the debilitating effect of which may be counteracted, and its efficacy increased, by dashing cold water on the patient as soon as he comes out of the bath; further promote the elimination of water from the system by giving hydragogue purgatives, such as compound powder of jalap, or elaterium: and relieve the renal congestion by cupping or leeching, which are more efficacious when the congestion has assumed a passive character than at the commencement of the attack. Afterwards give nutritious diet, with bitartrate of potash in diuretic doses.

When the bleeding is the result of *general hemorrhagic tendency*, give astringents, as lead, tannin, or gallic acid. The latter is of the greatest value, and may be given in doses of as much as five grains two or three times a day, either suspended in mucilage, or made into a pill. (Dr. R. B. Todd, p. 99)

Give oil of turpentine internally. (Mr. J. P. Vincent, p. 143.)

Hydrocele.—Employ the iodine injection for the radical cure of hydrocele. In performing the operation, take care to push the canula quite into the cavity of the tunica vaginalis, by a quick, semi-rotatory, jerking motion, having placed the forefinger on the canula so as to limit the extent of its introduction. If from want of this precaution, the fluid injected has become extravasated into the cellular tissue of the scrotum, make several incisions into it, which will generally prevent bad consequences. In cases where there is difficulty in forming the diagnosis of hydrocele, the operation of incision may be resorted to.

Congenital.—Let a truss be worn. If this does not suffice, acupuncturation may be safely adopted; but injection, of course, must not be thought of.

Of the Cord.—Open the tunic, evacuate the fluid, and apply a truss. Injection is sometimes recommended, but we should hesitate before employing it.

Encysted.—Puncture with a needle, and squeeze out the fluid into the surrounding cellular membrane. Then give purgative medicines, and let the patient wear a suspensory bandage, and evaporating lotion.

In Children.—Apply a lotion containing one drachm of muriate of ammonia, two ounces each of rectified spirit and liq. ammon. acet. and four ounces of water. If this does not succeed, employ acupuncturation, which is almost infallible in children. (Mr. B. Cooper, p. 174.)

Incontinence of Urine.—Excoriation of the parts exposed to the flow of urine, may be prevented by the application of collodion, and may probably also be cured by the same means. (Mr. J. Startin, p. 320.)

Lithotomy.—After the operation, do not keep the patient long on spare diet, but, as a general rule, give support at an early period. (Mr. B. Cooper, p. 172.)

When *incontinence of urine* follows lithotomy, give the extract of nux vomica beginning with an eighth of a grain thrice a day, and gradually increasing the dose. (Mr. S. Solly, p. 172.)

Orchitis, *Acute.*—Use active antiphlogistic treatment. Thus, in persons of plethoric habit, bleed from the arm; in others, in addition to the application of leeches to the affected organs, cup from the loins to about eight ounces. Give also a pill containing a grain and a half of calomel, one-third of a grain of tartarized antimony, and half a grain of opium; and the following mixture: ℞. Magn. sulph. ℥ jij.; liq. ammon. acet. ℥i.; liq. antim. tart. ℥ iss.; tinct. hyoscy. ℥ iss.; aq. menth. ℥vij. M. Capt. ℥i. 3tis horis donec alvus bene responderit. Keep the patient on low diet, and in the recumbent position. And as a local application use a lotion containing a drachm and a half of muriate of ammonia, two ounces each of rectified spirit and liq. ammon. acet., and four ounces of water. If the inflammation does not abate, open the congested vessels of the scrotum, and promote bleeding from them by warm fomentations. If enlargement and harshness of the testicle remain after the subsidence of the inflammatory symptoms, appl tripa

of lint spread with the following ointment: R. Ung. hydrarg.; cerat. saponis, aa. ʒij.; camphoræ, gr. v. M.; and over this, apply adhesive plaster, so as to make considerable pressure. Do not, however, use pressure in the early and acute stage.

Rheumatic and Gouty.—Give alkalies, and a small dose of colchicum at bedtime.

Gonorrhœal.—Apply warm fomentations to the scrotum, perineum, and penis, so as to reestablish the discharge, and then give calomel and opium every night. (Mr. B. Cooper, p. 174.)

Prostate, *Senile Enlargment of the.*—When there are severe symptoms, leech the perineum, empty the rectum by enemata, and then introduce opiate suppositories; and give a pill containing ext. colch. acet. gr. j.; pil. hydrarg. gr. j. pulv. Doveri gr. v.; ext. coloc. co. gr. iij.; twice a day. If the catheter is required, use a gum one, and introduce it with the utmost gentleness, and, if possible, without the stilette. In those cases where there is habitual retention of a portion of urine, on account of enlargement of the third lobe of the prostate, introduce the prostatic catheter regularly, and syringe out the bladder with warm water. When the urine is alkaline, give nitro-muriatic acid with opiates. When this does not restore the normal acidity of the urine, the administration of liquor potassæ will sometimes aulfil that object. (Mr. B. Cooper, p. 183.)

Phymosis.—Remove a circular portion of skin about a quarter of an inch wide. The outer layer of skin will then be drawn back, leaving the glans covered by the inner and tighter layer. With a sharp-pointed bistoury slit up this inner layer about half way back at a point corresponding to the frænum so as to form two angular flaps; turn these flaps outwards, and with a suture attach each angle to the edge of the external skin at about a quarter of its circumference from the frænum, and put in also a suture at the frænum; then draw all forward to cover the glans. (Mr. W. Colles, p. 173.)

Retention of Urine, *From Valvular Obstruction.*—When retention is caused by a valvular arrangement of the mucous membrane at the orifice of the bladder, it is proposed to make incisions in this membrane with an instrument like a short-curved sound with a concealed cutting blade. When the cause of retention is enlargement of the third lobe of the prostate, it is proposed to tear off the projecting portion of gland by means of a lithotrite. (M. Mercier, p. 182.)

From Stricture.—See "*Stricture.*",

From Abscess in the Perineum.—Open the abscess first, and then make an attempt to pass the catheter. If the cause of the abscess was other than an impermeable stricture, the catheter will very probably pass with great ease. (Mr. B. Cooper, p. 181.)

From Prostatic Disease.—See "*Prostate.*"

Sounding.—Use a short and straight instrument, when sounding a patient for the first time; the advantage of such an instrument is, that its point explores the post-prostatic fossa better than if the curve were longer. (Mr S. Solly, p. 172.)

Stricture, *Spasmodic.*—Give a dose of opium with tartarized antimony, a hot bath, and a warm purgative enema. These measures should always precede the employment of the catheter, and will generally be found sufficient to afford relief without resorting to its use. In obstinate cases of *mixed* stricture, cup in the perineum, give two grains of calomel and a grain of opium at night, and, during the day, small doses of the tincture of muriate of iron. At the same time employ the bougie very gently. If it produces pain and bleeding, apply caustic to the stricture to diminish its irritability and introduce into the rectum, at bedtime, a suppository containing a grain and a half of opium, and five grains of extract of henbane, mixed with soap. (Mr. B. Cooper, p. 189.)

Permanent.—In the first place, explore the urethra. Making the patient lie down on a sofa, introduce a bougie or silver catheter (No. 6), and press

it gently, for a minute or more, against the stricture. If it should pass the stricture, do not seek to introduce it further. After the use of the bougie, let the patient keep quiet and on low diet for the rest of the day, and take a draught containg liq. potass. gtts. xx.; tinct. opii. gtts. x.; mist. camph, ℥iss., at bedtime, and an aperient in the morning. In about forty-eight hours, introduce the bougie again, and this time it may be passed into the bladder, and allowed to remain for ten minutes or a quarter of an hour. If No. 6 cannot be introduced carefully try a smaller one. If no instrument can be passed, be guided as to the treatment, by the urgency of the symptoms. When there is retention of urine, and the pain complained of is very severe, put the patient in a hot bath, give a grain and a half or two grains of opium, and a purgative enema; and when the bowels are opened, introduce into the rectum a suppository, containing opium, and a quarter of a grain of belladonna. These means will generally relieve the urgent symptoms. Then proceed with the treatment, introducing a bougie gently every other day; and while this is being done, insist on the patient living very carefully, and give such medicines as blue pill with tartarized antimony, followed by aperients. If the stricture becomes irritable, give sedatives, and apply the caustic bougie carefully. If the attempts at dilatation by the bougie fail, try the repeated injection of tepid water into the urethra. If by all these means relief is not obtained and the patient is suffering from retention, or is threatened with ulceration of the urethra behind the stricture, the bladder must be punctured. Under very urgent circumstances we may puncture by the rectum, (provided that the prostate is not enlarged); but as a general rule it is much better to cut down upon the urethra, and divide the stricture in the perineum. (Mr. B. Cooper, p. 189.)

In a case of very tight and irritable stricture, the best plan is to introduce a grooved director *into* the tight portion, to cut down upon it, and freely divide the stricture, and introduce a catheter into the urethra. This plan must not be confounded with that of introducing a catheter *as far* as the stricture, cutting down upon its point, and then with the knife cutting away for the catheter to the bladder. (Prof. Syme, p. 187.)

When the catgut bougie is used, the great secret is to handle it with the utmost delicacy, and twirl it gently between the thumb and finger when it meets with obstruction. When it is introduced it should be allowed to remain for an hour. (Mr. S. Solly, p. 194.)

AFFECTIONS OF BONES AND JOINTS, &c.

Amputation.—In dressing the stump, instead of compresses and bandages, apply two long and broad strips of wetted lint, in a crucial manner, and support them by a circular strip, so as to support and press the flap against the bone. (Mr. J. Spence, p. 131.)

At the Ankle.—The following modification of Mr. Syme's operation has some advantages. After making the anterior incision from one malleolus to the other, mark out the form of the flap by carrying the knife deeply across the plantar aspect of the heel from the internal to the external malleolus: then disarticulate the joint, divide the tendo Achillis, and turn out the os calcis from the plantar flap by carrying the knife closely around the back and sides of the bone: lastly, remove the malleoli with the saw. This method is more easy and rapid than the usual plan of dissecting the flap from below upwards, before disarticulating. (Mr. J. Spence, p. 131.)

Dislocation, *Of the Astragalus.*—In cases of simple dislocation, attempt reduction. Administer chloroform, employ extension and counter-extension at the knee and foot respectively, and make direct pressure upon the dislocated bone. If the tendo Achillis is very tense and seems to hinder the reduction, divide it. (Mr. J. G. Crosse, p. 125.)

The following plan has succeeded in a case of dislocation inward.

Chloroform being administered, and the limb being laid on its outer side in a semi-flexed position, extension is made from the heel and foot by two assistants, the hands of one superposed over those of the other: and counter-extension is made by two other assistants from the thigh. The surgeon pushes the external margin of the foot with his knee, so as to produce great adduction of it, and then presses upon the astragalus with both his thumbs. (M. Boyer, p. 124)

Of the Femur backwards.—In making extension for the reduction of this dislocation, let the thigh be placed at a right angle, or nearly so, with the abdomen, keeping it at the same time in a state of abduction, and having the knee bent. (Mr. R. Quain, p. 123.)

Old.—Old cases of dislocation are to be reduced, less by force of extension than by the adaptation of appropriate manipulation. After the reduction, a long observance of immobility is even more necessary than after the reduction of recent dislocations. (Mr. J. P. Vincent, p. 122.)

Fracture, *Compound.*—If the edges of the wound can be got into apposition, apply collodion, so as to seal up one point after another till the whole is closed. (Dr. O'Farrall, p. 135)

Gangrene, *Traumatic.*—It is not necessary to operate for traumatic gangrene, if we carefully watch the patient for the first three or four days after severe injuries, and give food as the stomach can bear it, and stimuli when they are indicated. As a stimulant, give *brandy*, in preference to ammonia, which latter does harm by weakening the stomach. Regulate the secretions, if needful, by the use of mild mercurials with antimony. (Mr. J. P. Vincent, p. 206.)

Joints, *Diseased.*—The best kind of counter-irritation is that exerted by the issue made with caustic potash. In synovial disease of the knee the issue is particularly useful. (Mr. J. P. Vincent, p. 122.)

As a means of compression for enlarged joints, of the fingers especially, apply collodion. (Mr. J. Startin, p. 320.)

Morbus Coxarius.—When the head of the femur is carious, and is acting as a source of irritation and wearing the patient down, when we are satisfied that nature cannot accomplish a spontaneous cure, and when at the same time the caries is *confined, or nearly so*, to the femur, and there is no disease of other and internal organs, we are warranted in removing the carious bone. The operation consists in making a longitudinal incision over the head and for a convenient distance down the shaft of the femur, and another transverse one; clearing away the tissues down to the bone, turning it out, and sawing off the diseased portion; lastly, in uniting the edges of the wound by suture. (Prof. Fergusson, p. 114 Mr. H. Smith, p. 115.)

"Excision of the head of the thigh bone for caries of the joint, should be regarded as no less erroneous in theory, than objectionable in practice." (Prof. Syme, p. 119.)

Necrosis.—Never attempt any operation until the sequestrum is completely detached; and even then, do not interfere, if the extrusion of the dead bone is going on favourably. (Mr. J. P. Vincent, p. 133.)

Spine, *Lateral Curvature of the.*—In cases likely to be benefited by mechanical means, the best apparatus is "The Horizontal Lever Belt," invented by the Drs. Brown of Boston. Its use should be continued for months, together with such treatment as may be adapted to restore the general health. (Dr. W. J. Little, p. 18.)

AFFECTIONS OF THE SKIN, &c.

Acne, *Vulgaris.*—Apply collodion. (Mr. E. Wilson, p. 318.)

Baldness.—For the baldness which follows herpes or pityriasis, apply the following pomade, to which in very old standing cases a drachm of tinct. lyttæ may be added:—prepared lard ℥ij, white wax, ℥ij.; melt them

together, remove from the fire, and as the mixture begins to thicken by cooling, add balsam of tolu, 3ij., oil of rosemary, ℳ xx., and stir them well. (Dr. Neligan, p. 208.)

Bedsores.—Apply collodion. (Dr. Muirhead, p. 318.)

Burns.—Apply collodion. (Dr. Crawford, p. 318.)

Cancer, *Of Lip.*—Apply chloride of zinc to the sore, in the following manner: Mix together two parts of chloride of zinc and three parts of gypsum, spread the powder over the surface of the sore, protecting the edges of the healthy skin with vinegar, and in about a quarter of an hour apply a soft poultice. Dr. W. P. Brooke, p. 205.)

After the removal of cancer of the lip by operation, retain the edges of the wound in apposition by means of collodion. (p. 318.)

Chapped Hands.—Apply collodion. (Mr. E. Wilson, p. 318, Mr. J. Startin, p. 320.)

Chilblains.—Apply collodion. (Mr. J. Startin, p. 400.)

Erysipelas.—Apply a freezing mixture of pounded ice and salt, on a flat sponge or in a bag of silk gauze, to a part of the inflamed surface, and keep it applied for about a minute, or until the skin becomes white and hard. Then apply it to another part of the surface, and so on until large patches of the skin have become frozen. (Dr. J. Arnott, p. 198.)

Erythema, *Chronic, Of the Face.*—Apply collodion, with a view to gain the benefit of its contractile property. (Mr. E. Wilson, p. 318.)

Herpes *Labialis, Præputialis, and Zoster.*—Apply collodion. (Mr. E. Wilson, p. 318.)

Hospital Gangrene.—Remove the patient from the source of contagion, let him be kept cleanly, and have a good supply of fresh air. Destroy the diseased part with the actual cautery, or by the application of the pure mineral acids, or a solution of arsenic or of chloride of zinc, or other caustic which shall penetrate the sloughing parts and destroy a thin layer of the unaffected parts beneath them. On the separation of the sloughs, treat the sores upon general principles. Be guided as to the constitutional treatment, by the kind of fever which the symptoms represent; using emetics, purgatives, and the earl/ abstraction of blood, if the type is purely inflammatory, and less vigorous means, if it is of a different character. (Mr. G. J. Guthrie, p. 207.)

Lichen *Agrius.*—Apply collodion. (Mr. E. Wilson, p. 318.)

Lupus *Exedens and Non-Exedens.*—Apply collodion, with a view to obtain the advantage of its contractile power. (Mr. E. Wilson, p. 318.)

Prurigo *Pudendi* (*and other Species.*)—In those severe cases which are not benefited by other treatment, give strychnia, beginning with one-sixth of a grain twice a day, and increasing the dose to one-fourth of a grain. Occasional doses of tincture of henbane may also be given.

Senilis.—Give phosphorus internally, in the form of phosphorated ether, having preceded it, for a day or two, by repeated doses of tincture of hyosciamus. [The dose is not stated; but the dose of the tinct. æther. c. phosphoro of the French, is, according to Pereira, from 5 to 10 drops.—Ed.] (Dr. T. H. Burgess, p. 199)

Small Pox.—In order to prevent *pitting* on the face and neck, apply collodion. (Dr. W. H. Ranking, p. 318.)

Tumours, *Encysted.*—In cases of small sebaceous tumours, instead of dissecting out the cyst, puncture the tumour, squeeze out the contents, and apply nitrate of silver all over the internal surface of the cyst. The most convenient way of applying the nitrate, is, to have a probe coated with it. (Dr. R. L. Macdonnell, p. 271.)

Ulcers, *Chronic.*—Apply collodion, in the following manner:—Dry the ulcer with bibulous paper; wash it over with ether, by means of a soft brush; again dry with the paper; then apply the collodion with a brush in a circular manner, so as to cover the edges of the ulcer to a greater or less extent, as may be deemed necessary, and varnish over so much of the ulcer itself as to leave a small central opening for the escape of discharges.

Any stimulus judged to be favourable to cicatrization may be applied in the dry form before beginning to paint with the collodion. (Mr. Startin, p. 318.)

Indolent.—Dress the sore with a compress of lint dipped in cold water, and folded once, twice, or three times, according to the amount of compression deemed necessary; or, if the ulcer is very deep, cover it first with soft sponge torn up into very small shreds, and soaked in water, and over this apply the wetted lint in a single layer; then take three or more moistened strips of linen or calico, about two and a half inches wide, and apply them round the leg in the same manner as Baynton's strapping. Cover the whole by a calico bandage, placing compresses of lint about the malleoli, so as to insure the bandage being evenly applied. Soak the bandage with cold water, and envelope the limb in oiled silk, reopening this from time to time, to renew the cold affusion. At first the ulcer may require dressing every day, but, after a time, an interval of three, four, or even five days, may elapse between the dressings. (Mr. H. T. Chapman, p. 203.)

Take two parts of chloride of zinc, and three parts of gypsum; mix them, and spread the powder over the surface of the sore, protecting the edges of the healthy skin with vinegar. In about a quarter of an hour apply a poultice. (Dr. W. P. Brookes, p. 205.)

Menstrual.—Do not wait until the uterine functions are restored, but attack the ulcer at once. Begin by using solution of nitrate of silver, to allay the irritation; then apply strapping rather tightly, (see last Part of Retrospect, p. 231,) every other day, or every day, according to the amount of the discharge. Do not be discouraged, if the progress which the sore has made towards cure under this treatment, is to a great extent lost at the monthly period, but continue the treatment perseveringly until the ulcer is healed. Then treat the uterine disturbance, if it has not previously ceased spontaneously. When sores occur about the time of the cessation of the catamenia, take care, before healing them, to get a freely-discharging issue made. (Mr. G. Critchett, p. 200.)

Phagedænic.—In cases of phagedænic ulcer with extensively undermined edges, in which, if an escharotic were used, a large quantity of skin would have to be destroyed, take small strips of lint thoroughly saturated with black wash, and thrust them with a probe to the very bottom of the sore, so as to bring the black powder into contact with its entire surface. Afterwards apply strapping, *sec. art.* (Mr. G. Critchett, p. 200.)

Strumous.—A weak solution of iodine, or the black wash, are useful stimuli to strumous ulcers. If there is a mass of strumous matter forming beneath the skin, paint it over with tincture of iodine, or solid nitrate of silver. (Mr. G. Critchett, p. 200.)

Warts, *Venereal.*—Apply strong nitric acid to the excrescence, taking care not to injure the surrounding parts. (p. 186.)

Wounds.—Collodion is highly recommended as an application to wounds, especially incised wounds. (pp. 318, &c.)

AFFECTIONS OF THE EYE AND EAR.

Deafness. *From Perforation of the Membrana Tympani.*—In treating deafness arising from deficiency of the membrana tympani, by the introduction of a bit of moistened cotton wool into the perforation, (See Retrospect, Part XVIII., p. 238.) it is recommended to moisten the wool with glycerine, instead of water. The glycerine attracts moisture from the atmosphere, and thus keeps the wool moist for a length of time, and prevents the necessity of changing it frequently. (Dr. Turnbull, p. 342.)

Try the pellicle of collodion, as an artificial tympanum, where such a connivance is needed. Having got a portion of the pellicle of the required form, attach its edges to the sides of the meatus, by means of a small brush, armed with the collodion in solution, (Mr. J. Startin, p. 318.)

Of Old People—It generally depends upon *thickening of the mucous membrane and Membrana Tympani*. When this is the case, apply solution of nitrate of silver (from half a drachm to two drachms, to the ounce of distilled water) to the meatus externus, to the extent of half or two-thirds of its length, every third or fourth day; in some cases also apply a weaker solution (six grains to the ounce) to the membrana tympani itself. When there are symptoms of much congestion in the ear, apply leeches just *below* the meatus. If there is much irritation of the external tube, apply tincture of iodine, or an ointmnt composed of half a drachm of powdered cantharides and an ounce of cerate, below or behind the ears, daily, or every other day. When there is relaxation of the mucous membrane of the fauces, use astringent applications. At the same time give *very gentle* alterative doses of pil. hydrarg., hydrarg. c. creta, or hydrarg. bichlor. And let the patient take plenty of open air exercise, avoid close rooms, live moderately, and have a warm bath every week or ten days. (Mr. J. Toynbee, p. 211.)

Ear, *Foreign Bodies of the*.—Do not make tedious and painful attempts at extraction; if time is allowed, the natural processes will cause the ejection of the extraneous body. (Mr. J. P. Vincent, p. 157.)

Entropium.—After operations for entropium, unite the parts together by the application of collodion. (Mr. J. Startin, p. 318.)

Eustachian Tube, *Obstruction of the*.—Catheterism of the eustachian tube is an operation very rarely required: for examination with the otoscope (an elastic tube twenty inches long, tipped with ebony at both ends, one end to introduce into the external ear of the surgeon and the other into that of the patient) shows that obstruction of this tube very seldom exists. (Mr. J. Toynbee, p. 210.)

Fistula Lachrymalis.—Make the incision with a narrow-bladed knife, which should be passed into the mouth of the duct; slide a fine probe along the blade into the duct, and withdraw the knife; then pass the style by the side of the probe, and remove the latter. Never leave a canula in the nasal duct; it may become impacted and occasion a great deal of trouble. (Mr. W. W. Cooper, p. 209.)

Lachrymal Obstruction.—Examine the condition of the mucous membrane of the nostril, and if it is found thickened and congested, or ulcerated, apply to it by means of a camel-hair brush, an ointment composed of three parts of unguentum hydrargyri ammonio-chloridi, to one part of oil of almonds; or apply in the same manner a solution of nitrate of silver, four grains to the ounce. At the same time, attend carefully to the general health. (Mr. W. White Cooper, p. 209.)

Ptosis.—After operations for ptosis, unite the edges of the wound together by means of collodion. (Mr. J. Startin, p. 318.)

MIDWIFERY AND DISEASES OF WOMEN.

Abortion.—In cases of inevitable abortion, where the uterine contractions are feeble and inefficient, and there is considerable hemorrhage, let the patient swallow pounded ice freely, with a view to promote the action of the uterus. (Dr. L. Mackall, p. 233.)

Threatened.—At an early period of the attack, when the hemorrhage is slight, and the pains few and weak, give tincture of Indian hemp, (Donovan's tincture of the resin), in doses of five drops thrice a day. (Dr. Churchill, p. 329.)

Afterpains.—Remove coagula from the vagina and os uteri, and apply linimintum opii, by gentle friction, to the abdomen, or still better, to the mammæ. Take care, also, that all extra uterine causes of uterine contractions are avoided. Thus, in excessive after-pains, when there is no hemorrhage, and no other symptom of inertia of the uterus, do not let the infant be applied to the breast, until the uterine irritability has become calmed. (Dr. W. Tyler Smith, p. 258.)

Breech Presentations.—The child dies from hemorrhage into the placenta, caused by compression of the umbilical vein. To obviate this, tie the cord early, before the complete birth of the child; and endeavour to get respiration carried on while the head is still in the vagina. (Mr. J. O. Fletcher, p. 275.)

Cancer *of the Uterus*.—With a view to restrain the continued draining of blood, try the tincture of Indian hemp. Begin with five drops of Donovan's tincture of the resin, thrice a day, and gradually increase the dose to ten drops. (Dr. Churchill, p. 329.)

When the disease involves only a portion of the os uteri, and proves an impediment to the dilatation of the latter during labour, it may be excised with safety and advantage. (Mr. J. Arnott, p. 226.)

Chloroform, *Use of, in Midwifery*—Begin the administration of chloroform towards the end of the first stage of labour, when the os uteri is well dilated; except the pains are very severe, when it may be given earlier. Do not give such large doses as in surgical practice, except when operative proceedings are to be resorted to; in which case the anæsthetic state should be as deep as in surgical operations. (Dr. J. Y. Simpson, p. 414.)

Do not give chloroform in natural labour, except in cases where the pain is unusually severe, or where a severe nervous pain is superadded to the ordinary pain of labour. And do not give it indiscriminately, even in obstetric operation: thus in cases of retained placenta from inertia, the uterus would be more likely to contract upon the introduction of the hand, if the patient were not under the influence of chloroform. (Dr. W. F. Montgom- p. 338.)

Do not give chloroform in natural labour, except when there is severe pain. Always, if possible, use an apparatus for its administration. Give a smaller dose than is given during surgical operations except when it wished to stop uterine action in order to turn the child. (Dr. J. Snow. p. 338.)

Fallopian Tubes.—A method of introducing bougies into the Fallopian tubes, for the relief of some forms of sterility, is described by (Dr. W. Tyler Smith, p. 277.)

Forceps.—An air-tractor, which acts by suction, is recommended as a substitute for the forceps, in all cases in which the latter are used, and is also said to be applicable in many cases where forceps cannot be employed. (Prof. Simpson, p. 230, Mr. James, p. 230.)

Inertia *of the Uterus*.—Let the patient swallow pounded ice freely. This is a very efficient means of promoting the contractions of the uterus. (Dr. L. Mackall, p. 233.)

Very gentle dilatation of the os uteri with the finger, is extremely useful, when the pains are at all inefficient. (Dr. Lawrence, p. 228.)

Laceration *of the Pierneum*.—Apply collodion to bring the edges together. It has the advantage of retaining its firmness, although constantly wetted by the discharges. (Dr. Comstock, p. 391.)

Menorrhagia.—Give tincture of the resin of Indian hemp, (Donovan's), five drops three times a day. Its good effects are the best marked in those cases where the discharge, though excessive, is fluid, and but little mixed with clots, and where the uterus is not enlarged. (Dr. Churchill, p. 409.)

Give decoction of Thlaspi bursa 'pastoris (Shepherd's purse): a handful of the fresh plant in three teacupfuls of water, boiled down to two,—dose, a cupful twice a day. (M. Vanoye, p. 270.)

Nipples, *Chapped*.—Apply collodion. (Mr. E. Wilson, p. 392.)

Fissures at the Base of the.—Bring the edges together, and apply a pretty strong lay of collodion. (Dr. Simpson, p. 272.)

Placenta Prævia.—*Where no exhaustion has taken place*, or where it is but commencing, turn and deliver as soon as the os uteri is sufficiently dilated, or is easy dilatable. Until that time, make compression upon the placenta, by first evacuating the liquor amnii (by means of an elastic catheter with a spear-pointed stilette, passed by the side of the placenta, and then pushed through the membrane), and then plugging the vagina with

balls of tow loosely rolled up, and supported by a napkin soaked in iced water, applied to the vulva. And use those means which are calculated to support the circulation, and maintain or increase uterine action :—stimulants with opium, warmth to the extremities, pure air, and a moderate dose of ergot.

In a case of extreme exhaustion do not attempt to turn; but separate the placenta, and leave the child undisturbed, until some decided reaction has taken place. (Dr. E. W. Murphy, p. 246.)

PREMATURE LABOUR.—A safe and efficient mode of inducing premature labour, is by the warm douche applied to the uterus twice a day, by means of a canula properly introduced into the vagina. The water should have a temperature of 108o F., and should be projected with a force equal to a fall of eight feet. (D. Grenser, p. 235.)

PROLAPSUS UTERI.—The best instrument for the relief of prolapsus uteri is Dr. Physick's globe pessary. One of two inches in diameter, pressed upwards to the uterine extremity of the vagina, will keep the uterus sufficiently high, and is worn with great comfort. (Dr. Meigs, p. 269.)

PUERPERAL CONVULSIONS.—In cases of *hyperæmic* convulsions, bleed largely and promptly, at the very commencement of the paroxysm, or indeed as soon as the premonitory symptoms are sufficiently well marked. Give also a terebinthinate enema, and if the stomach is loaded, an emetic; or ten grains of calomel, followed by a saline senna draught containing a little tartarized antimony. And keep up the good effect of the depletion by repeated doses of tartarized antimony. Keep cloths wrung out of iced water applied to the head, and especially to the back of the neck; being careful, at the same time, to keep the lower extremities warm. When the paroxysm comes on, dash a basin of cold water rapidly in the face; and if this does not arrest it, take care that the patient does not injure herself during the fit, but do not hold her down, as if with the expectation of stopping the convulsion. Some recommend immediate delivery of the child, but it is not right to adopt this practice indiscriminately. If the head has descended within reach of the forceps, apply them; but do not use the forceps if the paroxysms have subsided, for fear of again inducing them. If the head is impacted, and the child is dead, remove it by the crotchet. In other cases trust to the uterine action for effecting the delivery. *Never turn*, except the turning be otherwise necessary, as for a preternatural presentation.

Asthenic, or Anæmic convulsions require a different mode of treatment. Get the bowels freely evacuated by the use of warm stimulating cathartics, such as aloes with assafœtida, turpentine, &c.; and then give opium, stimulants, as camphor, ammonia, wine, and brandy, and nutritious food. During the paroxysm, dash cold water in the face. If venous congestion of the head results from the convulsions, cup from the back of the neck, and then apply a sinapism; taking care at the same time to support the patient's strength, and to keep the surface warm.

The treatment of *hysterical* convulsions consists in the use of stimulating purgative enemata, followed by diffusible stimulants with opium, and in dashing cold water in the face during the paroxysm. (Dr. E. W. Murphy, p. 263.)

RETROFLEXION *of the uterus*.—Scarcely anything can be imagined "better devised for inducing disease," than Dr. Simpson's uterine supporter. (Dr. Ashwell, p. 268.)

"This supporter," (Dr. Simpson's) "will be found to create more disease than it cures.." (Anon., p. 268.)

RIGIDITY *of the Os Uteri*.—Is dependent upon two causes, sphincteric muscular contraction, and want of distensibility in the non-contractile tissue. The treatment must be modified according as one or other of these causes predominate. In ordinary cases it is sufficient to wait patiently the result of the natural efforts, and avoid all uterine excitation.

In plethoric cases, bleed, either from the arm, or by leeches applied di-

rectly to the os uteri, and give nauseating doses of antimony or ipecacuanha. Use also warm enemata, hip-baths, and fomentations. In cases of sphincteric contraction, careful dilatation with the fingers will sometimes succeed. The ultimate remedy, in cases of mechanical rigidity, is incision of the os uteri at the tightest part; and this may also be practised in those spasmodic cases where other means fail, and danger is apprehended. (Dr. W. T. Smith, p. 224.)

Direct a continuous douche of warm water upon the os and cervix by means of an appropriate instrument. (Dr. Scanzoni, p. 225.)

The use of chloroform relieves rigidity of the os uteri. (Dr. Snow, p. 338.)

Sterility, *From Contractions of the Os Uteri.*—Sterility frequently depends upon a constriction of the orificium uteri internum. To relieve this, after subduing any tenderness or irritation by local depletion, introduce a bougie or small two-bladed dilator, daily, or every other day, until the os uteri remains open, and about the size of a goose-quill. The dilator is best introduced with the aid of the speculum, the patient lying on her left side. Incision of the cervix uteri is not at all to be recommended. (Mr. G. T. Gream, p. 276.)

From Obstruction of the Fallopian Tubes.—A method is described of introducing a fine whalebone bougie into the Fallopian tubes. The operation is said to be not difficult, and has been attended with no bad consequences (Dr. W. Tyler Smith, p. 277.)

Ulceration *of Os Uteri.*—The best way to apply Vienna paste to the os uteri, for the purpose of changing the morbid action which gives rise to congestion of that part, is to use a glass rod, expanded at the end into a circular disc. The paste is spread upon this disc, and the rod introduced through the speculum, and pressed against the part we wish to act upon. (Dr. Mitchell, 270.)

Umbilicus *Hemorrhage from the.*—When a disposition to this hemorrhage is known or suspected, apply collodion after the separation of the funis, and before the usual compress is applied; and examine the part every day. When the bleeding actually occurs, it is necessary to adopt mechanical means to check it *without the least delay.* For this purpose, first pinch up the umbilicus between the finger and thumb, in the manner recommended for leech-bites; and if this is successful, fill the depression of the umbilicus with cotton wool, and coat it over with collodion, or apply plaster of Paris mixed up with water. If these means do not control it, make an eschar with a probe, director, or skewer, heated to whiteness, and afterwards coat with collodion. Lastly, if other means fail, tie the vessel, first introducing a fine probe into it, to act as a guide for the incision. Ligature is not recommended except as a last resource, because in these cases there seems to be a hemorrhagic diathesis, and, consequently, it is undesirable to make incisions. (Mr. E. Ray, p. 256.)

Uterine Catarrh.—Use injections of liq. plumbi acetatis, or of a solution of 3i. of iodide of iron in ℥xij. of distilled water. Inject the fluid very slowly, through a caoutchouc tube introduced about three lines into the os uteri, and of such diameter as not completely to fill the orifice of the uterus. (Prof. Strohl, p. 270.)

Vagina, *Injections into the.* A new instrument for injections into the vagina, the "Syphon Douche," is described by (Dr. W. Jones, p. 272.)

MISCELLANEA.

Anæsthetics. — *Chloroform.* — The use of chloroform in operations is not contra-indicated by any state of the patient as to age or constitution, nor by any disease which does not itself forbid the operation. In administering chloroform, always use an inhaler, and watch carefully the effects produced; and do not seek to produce insensibility in less time than two or three minutes. When the margin of the eyelid can be touched without

causing contraction of the orbicularis muscle, or even when it causes but slight contraction, any operation can be performed without pain. At this time, as the effects of chloroform continue to increase for a few seconds after the inhalation is discontinued, it is advisable to intermit the vapour for a few inspirations, or to dilute it with more air, so as not to carry the insensibility too far. When the operation is over, do not disturb the patient prematurely, but await the complete return of consciousness. (Dr. J. Snow, p. 338)

Dutch Oil.—The chloride of olefiant gas, or Dutch oil, is a safe and efficient anæsthetic.—The dose required is smaller than that of chloroform, and its effects are more agreeable. (Mr. T. Nunneley, p. 340.)

Collodion.—Its various uses in the treatment of wounds, ulcers, skin diseases, &c., have been mentioned under those heads. A method of colouring collodion, and rendering it opaque, and of making its pellicle less contractible and more elastic, and porous, so as to imitate the properties of the cuticle as much as possible, is described by Mr. Startin, p. 318.)

Contagion, *Prevention of.*— To preserve the hands or any part of them, from the contact of contagious matter in dissection, post-mortem examinations, or midwifery practice, apply collodion. (Mr. E. Wilson, p. 318, Mr. J. Startin, p. 320.)

A better application than collodion is, the compound solution of caout chouc and gutta percha; made by adding a drachm of gutta percha to an ounce of benzole, and also ten grains of India-rubber to an ounce of the same fluid, dissolving by a gentle heat, and then mixing the solutions. (Mr W. Action, p. 208.)

Cupping.—Apply collodion as a dressing to the incisions made in cupping. (Dr. W. H. Ranking, p. 318.)

Gargles.—The best way to use gargles is to draw them through one or both nostrils. (Sir J. Murray, p. 316.)

Operations.—After severe operations, do not keep the patient too long on spare diet, but give support at an early period. (Mr. B. Cooper, p. 1,73.

Poisoning, *By Lead.*—In cases of chronic lead-poisoning, give iodide of potassium. (M. Melsens, p. 217.)

By Chloride of Zinc.—Give solution of soap freely, or carbonate of potash or soda. (Dr. T. Stratton, p. 218.)

By Opium.—After the use of the stomach-pump, give coffee, and pass currents from the electro-magnetic apparatus through the shoulders, chest, abdomen, arms, and legs. In some cases, cold affusion will be beneficial. Such remedies as ammonia should not be given but under the most urgent circumstances. (Dr. Lankester, p. 218.)

Suppositories.—In using a suppository, take care that it is not merely placed within the anus, but passed up into the bowel *above* the sphincter. (Mr. B. Cooper, p. 189.)

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THE

RETROSPECT

OF

PRACTICAL MEDICINE & SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

Edited by

W. BRAITHWAITE,

Surgeon to the Leeds General Eye and Ear Infirmary, and Lecturer on Midwifery and the Diseases of Women and Children, in the Leeds School of Medicine.

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PRACTICAL MEDICINE.

&c., &c.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—THE MODE OF ACTION OF MORBID POISONS.—By Dr. J. W. Tripe.

[The mode of action of those morbid poisons which (as in the case of the exanthemata) protect the system from a second recurrence of the disease, is a very interesting subject of enquiry. It is presumed that such poisons act by producing some permanent alteration in the blood or the tissues generally, or in both of these. Dr. Tripe proposes to ascertain in what this alteration or modification consists, and how it is affected, by a consideration of the laws which regulate the action of morbid poisons generally. He says:]

Dr. Robert Williams in his elaborate work on morbid poisons was the first clearly to point out the analogy between the action of the ordinary and of the morbid poisons." The laws which he pointed out are the three following:—"Firstly, that all poisons have certain definite and specific actions; secondly, that they lie latent in the system a certain definite but varying period of time before these actions are set up; and lastly, that the phenomena resulting from the poison when roused into action, vary according to the dose or predisposition of the patient. These laws are common to all poisons or classes of poisons. To these laws we may add a fourth, and fifth, viz., that the specific action of poisons depends on the affinity existing between the liquids and the solids of certain parts of our organism, and the poison ingested; and fifthly, that this specific action ceases on the elimination of the poison from the system. The first law is one almost universally acknowledged, and forms the basis of the remedial part of the physician's art; for unless medicines had definite and specific actions, they would be valueless as remedies. As instances, we may adduce hydrocyanic acid, strychnia, castor oil, &c., which are severally known to produce, when taken into the fabric, certain determinate and invariable effects. It has long been admitted, that certain medicines—poisons—act more or less invariably on certain membranes or organs, or on certain sets of membranes or organs; but that the action depends on an affinity between the elementary tissues, or part of them, of the organ so acted on, and the poison itself, is less universally allowed, although it is, nevertheless, equally as true. In poisons of this class are included antimony, arsenic, copper, strychnia, and many others. In proof of this position we may adduce the experiments of Blake, as quoted in the *British and Foreign Medico-Chirurgical Review*, (July, 1848, p. 181–3.) He states that his experiments warrant the following conclusions:—"The various substances—mineral medicines—may be arranged into groups according to the similarity or dissimilarity of their effects, each group being distinguished by re-actions not to be found in any other class, while the re-action of each of its members closely resemble each other. The classes thus formed agree with those which are adopted by chemists in their arrangements of the different elements according to their isomorphous relations; and the only conclusion to be drawn from this interesting coincidence is, that the physiological action of these substances depends upon some property they possess in connexion with their isomer-

phous relations." Thus potash and ammonia produce analogous effects; strontia, baryta, and lead; soda and silver; lime, magnesia, zinc, copper, manganese, nickel, and cadmium; platinum, palladium, iridium, and osmium; phosphorus, arsenic, and antimony; selenium and sulphur; and lastly, chlorine, iodine, and bromine, form separate classes, each of which have the most striking analogy in their physiological actions. The metallic salts in general; the salts of potash and baryta, arsenic and phosphoric acids, agree in destroying the action of the heart; the greater part of the acids, and of the salts of silver increase its irritability. The doses however, of these substances necessary to produce their specific effects vary considerably.

The second law, that all poisons lie latent in the system for a definite but varying period of time, admits of but one exception, and that is more apparent than real, inasmuch as although comparatively the action is instantaneous, yet a certain short interval elapses between the taking of hydrocyanic acid and its effects. Narcotics, purgatives, diuretics, and other classes of medicines, all occupy a period of time of longer or of shorter duration, according to the condition of the patient as regards plethora, state of constitution, &c., and also according to the greater or lesser time ordinarily occupied by each medicine in producing its effects.

As an example of the third law, Dr. Williams adduces the action of oxalic acid. If this poison be taken in a small dose, death ordinarily results from inflammation of the stomach; while if the dose be very large, death may happen in a few minutes from the shock to the nervous system. We here have a good example of the modification induced by a variation in the dose; tartar emetic may be mentioned as another example.

The fourth law, that the specific action of poisons depends on the affinity existing between the liquids and solids of certain parts of our organism, and the poison injected, does not admit of so ready a proof as the other laws.

The following considerations may be adduced in favor of it:—firstly, that the ordinary action of a medicine may be induced on the distant organ, or organs, whenever it finds its way into the fabric, whether it had been introduced by the stomach, or injected into the blood. The experiments of Dr. Blake, already related, afford strong confirmation of this statement. The well-known fact, that particular purgatives will act on definite parts of the alimentary canal, that diuretics act on the kidneys, mercury on the liver, iron on the blood, all prove the same. Additional proof is also afforded by particular poisons attacking only particular viscera or tissues; and by their being found in greater quantity in certain organs, or tissues, as copper in the lungs, arsenic in the liver, &c., and in certain secretions, as sulphuric acid in the urine.

The results of the disease caused by the introduction of the morbid poisons into the blood tend to the same end. Mr. Paget, in his Lectures on Nutrition, &c. (published in the *Medical Gazette*,) adduces the Essays on Symmetrical Diseases, which were written by himself and Dr. Budd, as evidence that all diseases in which the two corresponding portions of the opposite sides of the body are similarly diseased, depend on the circulation of a morbid material in the blood, and an identity of composition in the tissues affected. He then proves, that certain morbid poisons, or other morbid matters, have certain "seats of election." Thus the syphilitic poison attacks in some patients corresponding portions of the tibia and of the scull with great exactness. The pelvis of two lions were exhibited, in which new osseous matter had been deposited, by a rheumatic disease, producing an irregular kind of patern, both sides being precisely alike, thus proving beyond a doubt that the specific action of the morbid poison must have resulted from some affinity between it and the tissues attacked.

That the specific action of the poison ceases on its elimination from the system, cannot be very readily determined, as we cannot easily ascertain

when the whole of the poison has passed out. Perhaps the best and most certain method of determining this point, is to examine chemically the urine and other secretions—excretions—to ascertain for how long a period the poison is passing off. But although this has been, and may be readily done in the case of mineral poisons, yet it cannot be applied to the class of morbid poisons, as we have no physical or chemical means of determining their existence. The only organic poison that we can prove to become mixed with the blood, and to pass out of it again—the amanita muscaria—affords very strong evidence of the truth of this law. The following quotation from Dr. Pereira's Materia Medica, first edit., Vol. 1., p. 15, supports this, "A man, for example, may have intoxicated himself to-day by eating some of the fungus; by the next morning he will have slept himself sober; but by drinking a teacupful of his urine he will become as powerfully intoxicated as on the preceding day." Can more powerful evidence be afforded of the entrance of the morbid poison into the blood, the circulation of it through the system, the production of its peculiar effects on the brain, the elimination of the poison through the agency of the kidney, and the consequent cessation of its specific action.

In opposition to this view of the subject, it may be objected that the specific effects of lead, or of arsenic, will frequently continue for weeks, or perhaps for months, after the poison was taken into the system, and that we have no right to assume that this action was caused by the actual presence of the poison. It has, however, been shown, that arsenic may continue to be excreted from the body for as long a period as five weeks after the dose was taken; and I knew of a person who excreted lead by his skin for more than three months after he had ceased to be exposed to the influence of the poison. Most, if not all of the specific effects of a morbid poison may apparently cease before the whole of the poison is eliminated from the system. Thus a person may infect another with the exanthematous disease from which he has suffered, after all the ordinary specific effects of the poison have ceased; that is to say, after the eruptive, and sometimes even after the desquamative stage has passed by.

Dr. Williams further states, "that the general laws observable in the actions of morbid poisons are for the most part precisely similar to those which govern medicinal substances, or only differ in a few minor points. These poisons have their specific actions, their periods of latency, while their phenomena equally vary according to the dose, or the predisposition of the patient." That the poisons are specific is proved by the precision of their course, and of the pathological phenomena which each individually exhibit. Morbid poisons, also, have their periods of latency, the duration of the period varying in the different diseases induced by them. Thus, the poison of scarlet fever ordinarily lies latent from a few hours to ten days; of measles from ten to fourteen days; and of small-pox from sixteen to twenty days.

The chief distinctions between the morbid and the mineral poisons consist, first, in the power which the former have of increasing within the system to a comparatively indefinite extent; and, secondly, in their specific effects being independent of the amount of the virus absorbed, a small dose producing as certain and as severe effects as a large one. Many of them, also are capable of infecting persons at considerable distances, and of exhausting the susceptibility of the membrane diseased to any future attack. These peculiarities are possessed by the virus of scarlet fever, and will, therefore, be briefly considered.

The theory of the increase of the virus of morbid poison within the system was propounded by the ancient physicians; for instance, Hippocrates attributed the phenomena of fever to a morbid matter in the blood, which being *concocted* for some days, was rendered fit for expulsion from the body. This theory has been revived and more philosophically explained by Liebig, who ascribes the peculiarities of this class of diseases to the fermentation of

the morbid poison in the blood. Liebig's doctrine of fermentation is, that ferment or yeast is nothing but vegetable fibrine, albumen, or casein in a state of decomposition, with their particles in a state of intestine motion. This motion being communicated to the particles of the vegetable, or of the animal matters with which the ferment is in contact, will, other circumstances being favourable, communicate the same kind of intestine movement to them, and thus split up their particles into new and less complex compounds. The gluten, or other azotised matters in the fluid, act therefore the part of fresh ferment.

Liebig elsewhere states, that animal fibrine, albumen, or casein may act as a ferment as well as vegetable. The poison of scarlatina having passed into the blood in perhaps an almost unappreciable quantity, multiplies itself within the body in a manner analagous to a ferment, until the whole of the pabulum in the blood that enables it thus to multiply itself, is consumed. Should there be no pabulum in the blood, no reproduction of the poison could ensue, nor could any of the ordinary effects of scarlatina occur, unless the quantity of the virus absorbed was sufficiently great to attack any membrane that had not been previously affected, or in which the change previously made had been effaced by the tendency existing in all altered diseased tissues to revert to their normal state. The nonsusceptibility of the patient to the subsequent action of the virus, is ordinarily attributed to this modification of the blood; but for reasons, to be hereafter stated, I do not consider this to be the sole cause of it. The second distinction between the mineral and vegetable and the morbid poisons, namely, that, the effects of the latter do not depend to any great extent on the dose of the poison, follows as a necessary result of the preceding law; for, if the amount of the virus circulating in the blood is ordinarily in proportion to the quantity of matter in the blood fit for its reproduction, it follows necessarily that the resulting disease will depend, not so much on the dose of the poison, as on the amount of pabulum then existing in the blood for its increase.

Med. Times, Sept. 8, 1849, *p.* 196.

2.—CAUSES OF INTERMITTENT AND REMITTENT FEVERS.—By Dr. Gayley.

Dr. Gayley has arrived at the following conclusions regarding the Etiology of Intermittent and Remittent fevers:—

1. That the lungs and the liver are the great decarbonizing organs of the body; that, their function being complementary, the activity of that function is always in an inverse ratio.

2. That during winter, the lungs, from the part they perform in the generation of animal heat, are the more active organs. On the other hand, in summer, the liver is the more active.

3. That exposure to a low temperature repels the blood from the surface to the internal organs. If this exposure takes place in winter, the lungs being then the active organs, the brunt of the congestion falls on some part of the respiratory apparatus; hence we have bronchitis, pleurisy, pneumonia, and catarrh, as the prevailing diseases.

4. But if this exposure takes place in summer, the liver being then in a state of stimulation, the force of the congestion falls on it. It becomes deranged, involving all those organs, more or less, whose blood has to pass through the liver to reach the heart. Hence, we have bilious affections, as intermittents, remittents, dysenteries, &c., as the prevailing diseases.

5. That the pulmonary diseases of winter and of cold climates, and the hepatic diseases of summer and of warm climates, are both produced by the same agents acting on the system; the different effects being solely owing to the different modifications of the agents, and the different conditions of the system when exposed to their influence; and we might with as much truth say that malaria was the cause of the one as of the other.

Nature is simple in all her operations. It is only in proportion to our ignorance that she appears mysterious. The mystery that all admit to hang over the origin of these diseases, and the failure that has hitherto attended every effort to explain it satisfactorily, we think is solely owing to the spirit of enquiry being on the wrong track. The idea of a specific poison, first started by Lancisi, has been embraced by most writers on the subject ever since; as a consequence, their labours have been expended in tracing the origin of a thing, the very existence of which is hypothetical.

Of the truth of this, the Proteus-like appearance that this agent assumes in the hands, or rather the heads of different writers on the subject, is *prima facie* evidence. Thus one describes it as being softened or entirely disarmed by passing over 800 yards of water. (Sir G. Blane.) Another thinks it can safely perform the voyage from Holland to England, yea, even to Scotland, a distance of not less than four hundred miles. (M'Culloch.) It cannot ascend to the second story of a house, and yet can seize its victim on a mountain side four hundred feet high. (Ferguson.) Stygian-like it ascends from the bowels of the earth, and angel-like descends with the dews from heaven. Were it delineated with all its eccentricities attached, I doubt much if even its most devoted admirers would be pleased with the picture.—*American Journal of Medical Sciences*, 1849.

Med. Gaz., Sept 7, 1849. *p.* 437.

3.—TREATMENT OF INTERMITTENT FEVER BY TARTAR EMETIC.—By — Moore, Esq., Assistant Surgeon, Upper India.

[Mr. Moore has treated a great many cases of intermittent fever in one of the Indian regimental hospitals, and he gives it as the result of his experience, that tartar emetic is preferable to any other medicine hitherto employed in this disease. He says:—]

Tartar emetic has been administered in nauseating doses, prior to the first stage of the fever, or the stage of invasion. It has been continued during the second or hot stage,—the stage of excitement. It has been continued during the third or sweating stage,—the period of the fever's crisis and decline.

The exhibition of tartar emetic in the treatment of intermittent fevers has been deferred until the bowels have been freely purged by pills or powders of calomel and jalap, followed by the common mixture of senna and Epsom salts. This preparatory evacuation of the bowels by calomel, jalap, or by some other equally active purgatives, has been invariably observed. It is a standing order in the regimental hospital. When it has been ascertained that the intermittent fever is not complicated with inflammation of the viscera of the thorax and abdomen, the lancet, leeches, and the cupping instrument, are kept in reserve until such inflammations become developed.—These preliminary steps taken, the administration of tartar emetic is commenced after the first paroxysm of the fever has clearly declared itself; the proportionate dose of the medicine for each patient during the progress of the fever being regulated by mixtures marked, A, B, C, D, E, of which an ounce every half hour or every hour is a dose. A contains one grain of tartar emetic to one hundred ounces of water. B one grain to fifty ounces. C one grain to twenty ounces. D one grain to ten ounces. E one grain to five ounces.

The advantages to be derived from regulating the doses of tartar emetic in this manner consist in having the means at hand to keep the patient's system under the influence of the tartar emetic, without producing any violent effects on the stomach and bowels either by vomiting or purging. The chief object to be kept in view is, to prostrate the patient's strength so completely, that when the first stage of the fever, or the stage of invasion, has commenced, it must work on the patient's system, debilitated by the nau-

seating doses of the tartar emetic. In like manner, the prostration of the patient's system is kept up during the progress of the second and third stages of the fever.

The value of tartar emetic as a remedial agent in uncomplicated intermittent fevers consists in anticipating the fever by prostrating the patient's system previous to the first stage, or the stage of invasion, setting in. In this respect tartrate of antimony and potash possesses advantages over all other medicines classed as emetics. The patient's system once brought under the influence of the medicine, can be kept in a state of extreme prostration by the administration of decimal and centesmal subdivisions of a grain repeated at short intervals without the effects of vomiting and purging being produced

The centesimal subdivision of one grain of tartar emetic is more suited for children and weakly females than adult males. On this account the mixture has been introduced into the list. When so small a quantity of tartar emetic fails in producing any effect on the system, mixture B, or the fiftieth part of a grain of tartar emetic, can be substituted. The mixture most frequently used in the regimental hospital of the 5th infantry is that marked D in the list, or the decimal subdivision of a grain repeated every hour. The quantity of the tartar emetic can be increased or diminished by changing the mixture, and by shortening or lengthening the intervals of time at which each dose is given.

In three-fourths of the patients thus treated with tartar emetic, the attacks of intermittent fever, if not cut short at once, have been modified.—Except in very obstinate cases, each recurring paroxysm has exhibited fewer marks of the acute form of the disease; and in point of duration, each stage of the fever has undergone a modification. In the simple uncomplicated form of intermittent fever, blood-letting has never been prescribed, nor has bark in any form been ordered. In cases of intermittent fever complicated with congestion and inflammation of one or more of the internal viscera, the lancet, leeches, and cupping have been freely resorted to in order to aid the effects of the tartar emetic. Occasionally it happens that if the duration of the fever—quotidian, tertian, quartan—be protracted, the patient's system becomes habituated to the tartar emetic. A mixture in which half a grain of tartar emetic has been ordered every hour has failed to produce the effect of prostration, vomiting, purging, or sweating.

Under these circumstances it is useless to persist in prescribing tartar emetic. The medicine must be omitted. The loss of its influence in prostrating the patient's strength, and in arresting the fever during its different stages, is but temporary. Twelve or fifteen leeches ought to be applied to the epigastrium and over the liver; or, the quick abstraction of fifteen ounces of blood from the epigastric and hypochondriac regions, by means of two or three cupping glasses applied at the same time, should be resorted to. This mode of local depletion is preferable to the application of leeches. Calomel and antimonial powder, five grains of each; or calomel and James's powder, in the same quantities, given at bed-time; and on the following morning a purgative draught, or purgative mixture, into which compound jalap powder enters, may be prescribed every fourth hour, until free evacuations from the bowels have been produced. Further treatment of the disease is suspended until a fresh paroxysm of the fever has distinctly declared itself. The tartar emetic is then resumed, and prescribed in the decimal subdivisions of a grain, as in mixture D. This temporary suspension of the tartar emetic, and change in the treatment, has generally succeeded in producing favourable results.

Tartar emetic is a medicine well worthy of an extensive trial in the treatment of intermittent fever. Unaided, it has seldom played false in subduing the uncomplicated form of intermittent fever, however severe. Aided by the lancet, by cupping, or by leeches—aided also by mercurial purgatives—it has seldom failed in its duty, to either patient or physician, in cases

of intermittent fever complicated with congestion and inflammation of one or more of the internal viscera.

I do not recommend tartar emetic as an *anti-periodic*. So frequently have I been deceived by the anti-periodic virtues said to exist in a certain class of medicines, that I confess myself a sceptic as to any such qualities being inherent in medicine. Quinine, bark in powder, and bark in decoction, administered in small and large, and frequently in repeated doses, have failed to check the onset of the fever, or to modify its symptoms. A single dose of Epsom salts has converted a quotidian into a tertian fever; a tertian into the quartan type. Under such circumstances, to which of these medicines ought we to attribute the virtues of anti-periodicity? But to the value of tartar emetic as a *remedial agent* in the treatment of intermittent fever, the results of more than 300 cases discharged cured, from the Regimental Hospital, 5th Infantry, Gwalior contingent; the results, also, of cases treated under my orders, as Civil Surgeon in charge of the district of Kuchwahargar, in 1847; and at present in charge of the district of Chundeeree, bear sufficient evidence. *Med. Gaz., Sep.* 14, 1849, *p.* 445.

4.—TREATMENT OF TYPHUS.—By Dr. Jones Lamprey, Trim, County Meath.

[In an account of the epidemic fever as it recently occurred under his observation in Ireland, Dr. Lamprey speaks thus of that form of the disease which presented the characters of our Typhus:]

The treatment of these cases, which lasted for such a lengthened period, was necessarily modified and altered according to circumstances, but was principally determined by the condition of the pulse, as in the typhoid form, which denoted the use of stimulants or the reverse. Port wine was largely used when delirious restlessness was present. The antimonial treatment originated by Dr. Graves, answered in restoring the nervous system to a quiet and composed state. Where the petechiæ were of a very dark colour, or threatening to run into a putrid condition, I have found the exhibition of yeast, in combination with camphor and nitric ether, of great service in staying the sceptic process, besides acting as a powerful stimulant. I cannot speak too highly of the stimulating and antiseptic properties of this mixture. I have seen it remove the dark, livid hue of the skin in this form of fever within a few hours; and, as another proof of its antiseptic powers, I have found that, on administering it in cases of dysentery attended with great fetor of the dejecta, it speedily removed all odour, and, at the same time, rather counteracted the frequency of the discharges from the bowels. The following is the formula I used:—

℞. Cerevisiæ fermenti, ℥x. Camphoræ, 3ss. Ætheris Nitrici, 3iv. Misce.

An ounce to be taken every hour, or every second or third hour.

The mixture soon becomes so agreeable to the palates of the patients, that it is necessary to keep it concealed from them, for fear of their making "too free" a use of it. *Dublin Quarterly Jour., Aug.* 1849, *p.* 79.

5.—TREATMENT OF THE DIARRHŒA AND DYSENTERY OF FEVER.—By Dr Hudson, Navan, County Meath.

[In the diarrhœa and dysentery of the second stage of fever, Dr. Hudson found that the internal use of mercury did no good. He thought that the application of mercurial ointment over the cœcum was sometimes useful; and so, in some cases, were leeching and blistering in the same region, with the internal use of mucilage and sedatives. Dr. Hudson remarks:]

I very soon experienced the efficiency of the mineral astringents, acetate of lead, nitrate of silver, and sulphate of copper, whether exhibited by the

with stagnant blood, or rather with an accumulation of red particles entangled in the coherent pale globules. For this reason the vessels in which the blood is stagnant, are of a deeper red than others, the red particles being arrested whilst the liquor sanguinis passes on.

London Jour. of Medicine, Aug. 1849. p. 727.

10.—SOME POINTS CONNECTED WITH SCARLATINA.—By Dr. P. Newbigging.

[During the epidemic of scarlatina which recently prevailed in Scotland, Dr. Newbigging had the opportunity of seeing a considerable number of cases at "Watson's Institution" in which 120 children of both sexes resided.

The treatment adopted by Dr. N. consisted, in the first instance, in the liberal administration of antimony, preceded by an aperient, and this repeated towards the disappearance of the eruption,—tepid sponging and careful regulation of the diet; and locally, the early and frequent application of lunar caustic, solid or in solution, to the throat, and the employment of water acidulated with nitric acid, as a gargle. When anasarca appeared as a sequela, a brisk purgative was given, and the administration of antimony and the antiphlogistic regimen were resumed; and in some cases leeches were applied over the region of the kidneys. Dr. Newbigging makes the following remarks in reference to the *condition of the urine in scarlatina*:]

The alleged connection between albuminous urine and degeneration of the kidney in this disease is a subject which has excited considerable interest, and this association of cause and effect received an apparently strong corroboration from the result of Dr. Hamilton's observations on scarlet fever, as it occurred in his practice in and around Falkirk. In the inference drawn from these observations as to the cause of dropsy, I for some time concurred. My original opinion, however, became modified by certain observations made in my practice generally, and my faith in its accuracy has undergone a still more material abatement in consequence of the investigations I have had an opportunity of prosecuting at Watson's Institution. These have led me to consider the anasarcous condition which arises during the progress of the convalescence from scarlet fever, to be, in very many cases, dependent on mere functional derangements, amenable to treatment, and leaving the health uninjured as regards organic alteration. Confirmatory of this view, I may mention that in an early stage of the disease, even at the time the eruption was just declining, having instituted an examination of the urine, I ascertained that, in every case, the albuminous haze was distinctly present, and remarkably so during the progress of the desquamation. That this appearance occurred without alteration, either in the specific gravity, except to a very small extent, or in the quantity of the secretion; and that it continued from a period varying from four or five to ten days, gradually becoming less defined, and finally disappearing altogether. This occurred in cases in which the urine maintained its normal standard as to quantity, where the patients were well, and certainly unaffected by any dropsical symptoms.

I have been encouraged to lay these observations before my professional friends, in consequence of the corroboration they seem to have received by the careful investigations made by Dr. James Begbie, and published in the "Monthly Journal" for January. His remark corresponds with my own experience, that "if careful examination of the urine be instituted, albumen in small amount will be found to exist in every case of scarlet fever."

It is worthy of remark that the quantity of urine voided at the period of desquamation is even greater than in health, although it may contain albumen, and this is interesting, as, in dropsy occurring, it may be subse-

quently in the same case, the amount is greatly diminished, sometimes altogether suppressed, so that any diminution of this secretion, without apparent increase of albumen, may be almost certainly considered as the forerunner of anasarca.

These observations, although corresponding with those of Martin Solon, who ascertained the presence of albumen in *twenty-two* out of *twenty-three* cases, are, I am aware, irreconcileable with those of some other authors, more especially with Philippe, who states that, although the succeeding dropsy was very common in the mild epidemic which he witnessed, yet, in *sixty* cases of the disease, in which he tested the urine for albumen, employing for this purpose both heat and nitric acid, no trace of that principle was discovered.

Dr. Scott Alison remarks in his "Clinical Observations," that he has observed dropsy to ensue more frequently after a severe attack of scarlatina, than when the symptoms were of a more moderate character. Also, that the urine in some cases according to his analysis, was of specific gravity 1·005, while in the others it was as high as 1·030; and he is of opinion that the kidney becomes organically affected at an early period of the disease. From these deductions, it is almost unnecessary to remark, that my own investigations, as well as those of others, differ essentially. I am greatly disposed to believe that, in many instances, the albumen is eliminated at the kidney—not owing to any disorganization of that viscus, but that the blood, in all eruptive diseases, undergoes certain changes, and that in scarlatina this is exhibited by the presence of albumen in the urine; and that, in cases where the kidney is organically affected, as, doubtless, it is occasionally, that this arises from a specific inflammation of that organ. I am sensible that these observations are partial and incomplete, and had I again an opportunity of investigating a series of cases similarly circumstanced, I would avail myself of more minute analysis; at the same time I feel disposed to draw the following conclusions from what I have observed:—

1st. That in very many cases albumen appears in the urine at an early period in scarlatina, without other alteration of this secretion, or affection of the system generally. 2nd. The diminution in the quantity of this fluid may be considered as a certain forerunner of anasarca. 3rd. That the treatment should be strictly antiphilogistic, the diet being for some time carefully regulated, so as to exclude much azotised food. 4th. That the patient, however mild his symptoms, should be confined to bed for several days after the eruption has declined.

[Dr. Newbigging made trial of *belladonna as a prophylactic*. He says:]

Having ascertained the number of children unaffected with scarlet fever, or who were uncertain as to ever having had it—making in all sixty-nine—I directed that belladonna should be administered to them, in the proportion of one-sixth to one-fourth of a grain twice a-day, according to the age of each child—the first dose being given before breakfast, and the last dose at bed-time. This plan was adopted on the 16th October. Three new cases occurred between that and the 20th. After that date no child was affected, nor has there been any instance of scarlet fever since that period in the institution. The use of this preventive was continued during upwards of five weeks. It may, perhaps, be asked why the belladonna was not administered at an earlier stage of the epidemic—indeed, on the first occurrence of a case of scarlatina? My answer to this opposite question, I confess, is not perfectly satisfactory, viz., want of faith, and hence confidence, in the prophylactic properties of belladonna, and this though aware of the report made at the Orphan Hospital of Langendorf, in Prussia, in a family of 160 individuals, where belladonna having been administered immediately on the occurrence of the epidemic, two only took the disease. I should now consider it my duty to lose no time in making use of this medicine on the first appearance of this disease, and I would strongly recommend the same plan

of practice to those of the profession who are connected with similar educational institutions, with the view, not merely of attempting to ward off a malady so uncertain in its progress, and occasionally so fatal in its termination, but also with the object of accumulating information on a point of such paramount importance to the public health.

The opinion I have adopted on this point has been greatly strengthened by a similarly beneficial result, produced some time afterwards in another case. I was requested to visit a young gentleman at a large educational seminary. I found him labouring under scarlet fever, with profuse eruption, an aphthous, and very painful condition of the throat, accompanied by all the usual symptoms exhibited in the acute stage of a smart attack of this disease. I caused my patient to be removed, a few hours after first seeing him, to the house of a relative, and placed his brother, who continued to reside in the seminary, upon belladonna. This treatment was adopted in the other member of the family, consisting of nineteen, who had not previously been affected with scarlet fever. No other case occurred. I am well aware, and can fully appreciate, how much, at times, the practical physician may be disappointed, under apparently similar circumstances, as to the efficacy of an acknowledged, and it may be favourite, remedy; and doubtless it may fail, and we may be unable to explain the reason of its want of success; but these two instances of the apparent efficacy of belladonna, administered under circumstances in which a continuance of the disease might have been expected, weigh greatly with me in advocating a fair trial, at least, of this remedy. *Monthly Jour., Sept. 1849, p. 1048.*

11.—TREATMENT OF SCARLATINA BY INUNCTION.—By Dr. Schneemann.—Translated by J. L. Milton, Esq.

[Dr. Schneemann, physician at the Hanoverian court, has published a work advocating a new mode of treating scarlatina, which, he says, materially shortens the duration of the disease, and checks all infection at the end of the third or fourth day. Mr. Milton gives the following translation of those portions of the pamphlet which relate to treatment.]

From the first day of the illness, and as soon as we are certain as to its nature, the patient must be rubbed every morning and evening over the whole body with a piece of bacon, in such a manner that, with the exception of the face (?) and hairy scalp, a covering of fat is every where applied. In order to make this rubbing-in somewhat easier, it is best to take a piece of bacon the size of the hand, choosing a part still armed with the rind, that we may have a firmer grasp. On the soft side of this piece, slits are to be made in various directions, in order to allow the oozing out of the fat: and this is still further promoted by placing the bacon, for some time previously to using it, near the stove.—in the oven, or on the hob. But it is not proper to make the friction with a warm piece, and the fat must be allowed to cool before using it. The rubbing must be most conscientiously performed, and not too quickly, in order that the skin may be regularly saturated with fat. During the process, the body is never to be wholly uncovered, but only that part on which the operation is being performed, and, if considered necessary, the whole can be done under the bedclothes. But such precaution as this is unnecessary; the children may safely get up. No injury will ever be done by it, and after once seeing it done, the mother or nurse soon learns to relieve the medical man of his task. Although this plan, from the mess it makes, is not calculated to find favour in the fine world—although it dirties bed and linen, as well as the persons of the children, yet the first few days of its application produce results which make all this forgotten, and inspire the mothers with enthusiasm for this method. With a rapidity bordering on magic, all, even the most painful symptoms of the disease are allayed; quiet, sleep, appetite, and good humour return, and there remains only

the impatience to quit the sick room. To obtain this, however, other things are necessary besides mere infriction with fat, but still I think myself bound to impute the most important share of the merit to this peculiar treatment of the skin. The truth of this assertion will appear from a citation of the first results which follow on the treatment indicated.

1. The improbability, I might say impossibility, of the patient getting cold while the skin is thus covered with fat—a point in no disease more important than here; were this the sole benefit of the fatty infriction, it would still be of great service.

2d. The dry brittleness of the skin, and the tormenting itching, are by it not only materially alleviated, but for the most part fully put a stop to. Every practitioner knows how often the itching and burning of the skin in scarlet fever are unendurable to children, keeping them constantly in distressing movement, and robbing them of sleep. Hence, children are generally well satisfied with this rubbing-in, and often ask for a repetition of the proceeding long before the time is come.

3. The influence on the physiological functions of the skin is still more important. During the coming-on of scarlet fever, the skin becomes diseased, in consequence of which it dies off. During this illness, and until a new covering is again prepared for the surface the functions of the skin are naturally very faultily, or, during the desquamation, probably not at all, performed. In order to explain the extent and importance of the imperceptible functions of the skin, merely mechanically viewing the matter, I refer the reader to the accurate experiments of Seguin, which fix the quantity of matter thrown off from the outer skin at eleven grains per minute in a grown person, and therefore more than two pounds per day. What efforts must it cost the organism to lead so large a quantity into other paths, in order to throw it off when the skin is incapable of doing so! But the preservation of the whole being is the first and most important law, and however great the effort may be, the other organs must perform this function.

(I must here observe, that at first Dr. Schneemann thought—and indeed, in this portion of his pamphlet, stated—that no desquamation takes place under this treatment, so that, in fact, the functions of the skin are maintained in full integrity. Later observation, however, convinced him that, with all possible care, desquamation to a certain extent will ensue. This he communicated to me, requesting me to insert it in the translation. To resume:—)

4. With this disappearance of the desquamation disappear all those bad symptoms which attend on it. This feature alone of this method of treatment will have its weight with the practitioner in all ages. In order now to give a striking proof of the importance and the bad influence which the interrupted functions of the skin produce on the healthy activity of relative, even if distant, organs, I may cite the fact, that death is always the result where more than one half of the skin has been destroyed by fire or boiling liquid. Sooner or later such is the case. A similar destruction of the skin ensues in scarlet fever, with this difference, that it takes place gradually, and thereby the organism is better enabled, by employing all the activity of the body, to find aid against the mischief which, to the injury of the patient, must result from the cessation of the functions of the skin.

5. The oxidation of the blood is thus considerably promoted, the interrupting of which is the cause of such serious phenomena. As the disease of the throat is not improbably in great part due to the interruption of the functions of the skin and lungs, it must naturally disappear, or not present itself, where these are continued in integrity; and such is found in practice to be the case.

6. Owing to the fatty covering, the skin is kept in a moist state, and the cuticle thrown off cannot be driven about the room by currents of air, as happens where the patient has been kept dry: and thus one fertile source

of infection is kept closed up, it being well known that infection is most easily communicated at the period of desquamation. The author believes, not only that such is the case, but also that by this method the danger of infection under any circumstances is materially lessened with the disappearance of the eruption from the skin; inasmuch as the process of generating infectious material is interrupted by restoring the skin to its normal state, a point of which he need not point out the importance.

7. By shortening the period of desquamation, and protecting the patient against the sequela of the disease, the duration and treatment of this can be shortened to a perod of six to ten days—an immense advantage to the patient and his relatives, particularly as he is always liable to relapses, and is, even in mild cases, considerably weakened.

8. The remedy is (cheap), harmless, practical, and is perhaps never counter-indicated.

The linen must not be too frequently changed, as a clean shirt takes up more of the fatty matter than one already saturated, and hence the skin is sooner deprived of its fatty covering. The rubbing-in is to be kept up twice a day for three weeks, and once a day during the fourth. The patient is, after this, to be daily washed with cold water and soap, and then only is the warm bath to be commenced. This process does not, as has been argued in some colleges, interfere with the natural course of the malady, and thus expose the individual to second and third attacks. In severe cases, the remedy may be repeated three or four times within the twenty-four hours. The main point is to keep the skin *always* cool and moist; and here, even with all possible precaution, the skin will sometimes come off in certain places. But cases of this kind are only unimportant. The practitioner will do well to fix the exact hour at which the rubbing-in is to take place; it will then most probably be better and more regularly performed.

[Dr. Schneemann recommends also that the patient should be confined to bed as little as possible, should have light but not starving diet, and should not be kept hot. Dr. S. speaks highly of the use of *belladonna as a preventive*. He says.]

Its action appears to be, by altering the relations of the nervous system, to diminish the disposition to the disease. Thus, when it is moderate, the belladonna extinguishes it; and when high, diminishes it. Of this the author has in many instances practically convinced himself. In numerous instances, only one child of a family was attacked. His prescription is—Take of extract of belladonna. one or two grains; distilled water, one ounce. Mix. To each child are to be given, morning and evening, as many drops as it has years. It is to be continued at least fourteen days.

But not to confine himself to his own testimony, Dr. Schneemann gives that of Jordens, Ettmuller, Hedenns, Gumpert, Hufeland, Martius, Pormey, Behr, Benedix, Thaer, &c., who have testified to the value of belladonna; and though, he says, as many opponents might be found, yet it is scarcely credible that all the former had deceived themselves.

In certain sections of the circle of Bayeux, Dr. Feron preserved from scarlet fever all the children who had not been attacked before he commenced operations. In 400 cases near Valenciennes, treated with belladonna, not one person was attacked. Hahnemann has, however, only recommended it where the eruption is smooth, bright-red, and in large patches. But where there are roughness and purpleness of the skin, it seems to be useless; and it may be that the bad success of many cases was owing to the neglect of this distinction.— *Lancet, Sept.* 15, 1849, *p.* 285

12.—TREATMENT OF SCARLATINA BY HOT WATER APPLICATIONS.—By F. A. Bulley, Esq., Surgeon to the Berkshire Hospital.

Mr. Bulley describes a mode of treatment which he has adopted and

found successful not only in scarlatina, but in every instance of febrile disturbance that has come under his observation within the last few years. He gives as an illustration the case of a farmer, who, after several days of premonitory symptoms, became covered with a rash. The next day Mr. Bulley was sent for and found his patient labouring under an attack of scarlatina, which he (Mr. B.) believed would prove a very severe one. The following treatment was adopted:]

The patient was placed upon a bed, on which, the sheets having been removed, two blankets had been laid, then a flannel pad, composed of four thicknesses of course household flannel, sixteen inches long by ten inches wide, stitched round the margin to keep it together, and wrung out of hot water till almost dry, was laid as hot as he could bear it apon the pit of the stomach and over the region of the heart; and while it was still warm, the blankets, one by one, were carefully folded round his body, so as to completely confine the perspiration and heat, which might be generated by this process; at the same time, another pad of two thicknesses only of the coarse flannel, wrung out of boiling vinegar and water, was placed round the throat for the relief of the local inflammation. After he had remained enveloped in the wrappings a little more than half an hour, during which time the febrile excitement had been somewhat increasing, he burst into a profuse and general perspiration, in which he was allowed to remain for two or three hours longer, with an evident abatement of the symptoms, when the blankets were carefully removed, and the flannel pad withdrawn; after this, he had some refreshing sleep, and but little return of the burning fever; he was now ordered to take half a drachm of Dr. Stevens's saline powder in a mixture every four hours, and to use the following gargle to the throat:—

R. Armenian bole; burnt alum powdered, aa. gr. 40, brown sugar, gr. 60; water ℥ viij, Mix.

[This plan of treatment was so successful that on the seventh day from the first appearance of the eruption, the patient was going about his farm. Mr. Bulley makes the following remarks upon the treatment:]

I have had the satisfaction to observe, that the simple method which I have adopted in the treatment of fever, and which I practised in the foregoing case, has never, in any trial which I have made of it, failed in its object. I have now used it in a great number of cases, some of them of the worst description, and in every instance where the process has been judiciously managed, it has either at once annihilated the fever, mitigated its severity, or diminished its duration. I have also found it extremely useful in cases of small pox, in constitutions where the circulating power has been naturally so feeble as to be insufficient of itself to throw out the morbid elements from the blood by the skin. *Medical Times. August* 25, 1849, *p.* 153

13.—DROPSY FOLLOWING SCARLATINA.—By Dr. Hughes.

[At a meeting of the South London Medical Society, after Mr. Swete had read an account of cases of scarlatina,]

Dr. Hughes said, it is several years since I stated the fact, that it is in the milder forms of scarlatina we have usually anasarca, the effect of exposure to cold. The parents brought children to the hospital swollen all over, and at first the previous scarlatina was denied; but on close enquiry it came out that the child had sore throat, and sometimes an eruption. The cause of anasarca he believed to be a suppressed action of the skin, the consequence of exposure to cold; congestion of the kidneys supervened —perhaps it might be called an inflammatory action, for there was occasionally a passive hemorrhage from these organs. All Mr. Swete's cases were mild, and he thought that in all the anasarca cases the urine, if examined, would have been found albuminous. He considered it singular

that the head affections should come on and no albumen in the urine; and he also thought that in an institution, such as Mr. Swete had the care of, it would not have been difficult to have prevented the convulsions by attending to the skin. It is more important to take care of the skin after a mild than after a severe attack of scarlatina; for in the latter the parents keep the child in the house. Mr. Hicks has asked, is the disease from an inflammatory or debilitating cause? It is not necessarily either; it may be inflammation of a low type, so as to be fatal in twenty-four hours. In most cases children are cured by antiphlogistic means. It was essential to order a flannel dress, and the occasional use of the warm bath. He had never seen the kidney of a child who actually died of the disease. In one case where the child died after many months, the kidney was white and creamy; he did not think this singular, for the function of the kidney may be disturbed just as that of the skin. In the advanced stages he had seen benefit from a stimulant, especially the tr. fer. sesquichlor.

Med. Gaz. July 6, 1849, *p.* 38.

14.—TREATMENT OF THE NEPHRITIC DROPSY WHICH FOLLOWS SCARLATINA.—By Dr. F. J. Behrend, Erlangen.

Dr. Behrend observes, that the first thing to be done is to diminish the congestion of the kidneys, so as to prevent the exudation of plastic matter, and to restore the diuresis. For this purpose the best means are repeated applications of a sufficient number of leeches—from six to ten—to the lumbar regions, or repeated cuppings: the former seem the best remedy. The second indication is to restrict the diet, and to administer mild diuretic salts, as the acetates of potash and soda, which act also on the intestinal canal. Infusion of elder flowers is useful as a drink, for promoting diuresis. The body should be kept warm by being wrapped in flannel, impregnated with the vapour of sugar: this is prepared by throwing pounded white sugar on glowing coals, and holding the flannel over it. The limbs may also be enveloped in raw wool. I have lately tried the effect of sponging the skin with turpentine, and then covering it with flannel; but cannot speak with certainty as to the efficacy of this treatment. If the dark colour of the urine return after it has been removed by means of local depletion, this must be repeated, without any regard to the apparent weakness of the child. This state of the urine is indicative of a highly congested state of the kidneys. If the attack be less acute—if there be œdema, and the urine be albuminous, but clear and in sufficient quantity, spirits of nitric ether may be used, in addition to the diuretic salts. A restricted diet is not so necessary, as that the child should be kept in bed and in a warm atmosphere, so that the skin may be kept in a state of functional activity. Friction with oil of turpentine, warm baths, and mild purgatives, are indicated: sanguineous depletion is not proper. The child must be kept very warm for a long time: it should be daily rubbed with flannel for a month; and if it continue pale and weakly, iron should be administered; and the patient should have the benefit of country air. In dropsy of the pericardium and pleura, and in hydrocephalus, there is so great danger, that these affections will have to be treated without reference to the original cause of the disease. There is but little hope of recovery, unless nature takes some extraordinary course. *London Jour. of Medicine, August*, 1849, *p.* 770.

15.—ANÆMIA.—By Dr. C. J. B. Williams.

[Among the causes of anæmia, are insufficient food, impure air, and various chronic diseases; but especially irregularity of the uterine functions.]

The general symptoms of *anæmia* are those of general muscular weakness, weakness of the heart, feebleness of the circulation, organic weakness, and imperfect sanguification. The surface also exhibits physical signs of the scantiness of the blood; and the venous murmurs heard in the neck, and the aortic murmur frequently heard, give additional evidence of its thinness. When drawn, the blood is thin and watery, and forms a very small contracted clot, generally with a buffy coat. The red particles are diminished more than the fibrin; and the albumen is generally defective in quantity, except in paraplegia. Symptoms indicating irritation or exaltation of function often occur, many of which are referable to the intestinal canal. Sometimes there are more direct signs of excitement of sensibility, of the excito-motory function, or even of the mind. Dr. Williams explains the fact of the nervous system being generally excited in anæmia, by the peculiar distribution of the circulation through the nervous centres. He adopts the view, that the quantity of blood in the head and spinal canal is subject to variation; the intra-cranial and intra-spinal vessels being unable, not being exposed to atmospheric pressure, to accommodate themselves to the reduction of the blood, and hence retaining more than their proper share. The effects vary according to the propulsive power possessed by the heart. "Under the influence of temporary palpitation, fever, or other kind of excitement, the brain and spinal cord, through their uncontracted vessels, which are among the nearest to the heart, receive an unusual share of its exalted but partial force; an erethism of some one or more of the functions of these nervous centres is the consequence: and pain, spasm, sensorial excitement, intolerance of light and sound, or sympathetic irritations, of some kind or other, occur." There may be in such cases, obvious signs of an excess of blood in the head, while the extremities and surface are bloodless, and more or less cold. Epistaxis, if it occur, may produce momentary relief, but may ultimately add considerably to the evil. "On the other hand, if the heart's action is feeble, it may be inadequate to propel the blood accumulated in the vessels of the brain; it therefore stagnates, and may cause some of the symptoms of congestion in that organ. Hence headache and giddiness, relieved by the recumbent posture, drowsiness, impaired mental faculties, obscured vision and hearing, partial paralysis, and, in extreme cases, coma or catalepsy. In such cases the blood is accumulated more in the veins and sinuses of the brain than in its arteries; and, not receiving enough force from the heart to keep it in full motion, it partially stagnates, and the functions of the corresponding parts are impaired in proportion. This congestion may be only temporary, and lead to no serious results: but in some cases I believe there occurs an event that has not been noticed by pathologists—namely, a coagulation of the blood in the sinuses, and a consequent permanent obstruction to the passage of the blood through the brain. I have met with several cases more or less corresponding with the following description:

"A young female becomes anæmic, and after exhibiting various symptoms of feeble general circulation, with headache, drowsiness, and impaired sensorial functions, suddenly becomes worse; passes into a state of stupor, with dilated pupils, sometimes varied by slight manifestations of delirium, throbbing of the carotids, and partial heat of the head, and dies comatose. On opening the head, a small quantity of serum is found under the arachnoid and in the ventricles, sometimes with a little lymph (in one case there was none.) The vascularity of the membranes is remarkable, but the vessels most distended are the veins, and in the larger of these and in the longitudinal sinus, there is a firm coagulum. In parts, especially at the torcular herophili, this coagulum blocks the whole sinus, and exhibits a separation of fibrin, portions of which are softened down into that opaque puriform matter which was long mistaken for pus, but which Mr. Gulliver has shown to be a mere disintegration of the fibrin, which mere stagnation in a warm temperature may effect. These have been taken for

cases of meningitis. No doubt inflammation may supervene in them occasionally, but in two cases that have fallen under my notice, there was no adhesion of the arachnoid nor deposit upon it, nor any other unequivocal mark of inflammatory action; yet the fibrinous and bloody concretions in the veins and sinuses were most remarkable for their size and firmness. It appears to me most probable, that these affections originate in the encephalic congestion connected with anæmia. Fibrinous concretions form on the transverse bands of the sinuses, and increase until they considerably obstruct the passage of the blood: hence the impaired state of the cerebral functions, amounting at last to coma. Reaction may take place, with determination of blood, and even inflammation, and these cause those symptoms of partial excitement that sometimes exhibit themselves; but neither during life, nor on examination after death, are the proofs of excitement so prominent as those of obstruction and interruption to the cerebral functions. It must be remembered, that in anæmia the fibrin of the blood is not diminished in proportion to the other animal contents, and it has a greater tendency to coagulate than in healthy blood."

In the *treatment* of anæmia, "a nourishing diet, with as much animal food as the digestive powers of the patient can master—tonics that best restore the appetite, the powers of digestion, and sanguification—the use of means, if necessary, to promote the natural excretions—and an exposure of the patient to the pure air and light of heaven, as free and as long as the strength and sensibility will bear—form the chief items of the treatment." Dr. Williams has a high opinion of the utility of iron, especially the syrup of the iodide, preceded, if necessary, by some mild vegetable tonic. Besides tonics, special symptoms require appropriate treatment. Diffusible stimulants are often required to obviate temporary weakness; sedatives and narcotics, to allay nervous excitement: external stimulants, rest in the horizontal posture, and warmth to the extremities, to counteract the unequal distribution of blood. Depletion is of questionable utility; and more good may be done by mild stimulants and tonics, with derivants. If bleeding be at all employed, it should be local, and moderate. The nervous symptoms do not always cease with the removal of the anæmia; in such cases nervous excitement should be avoided; and the most serviceable medicinal means are the metallic tonics; especially valerianate and sulphate of zinc, nitrate and oxide of silver, and sulphate of copper.

London Jour. of Medicine, August 1849, p. 725.

16.—ANÆMIA AS A CONSEQUENCE OF RHEUMATISM.—By Dr. O'Ferrall, Dublin.

[In commenting on some cases of acute rheumatism at St. Vincent's Hospital.—]

Dr. O'Ferrall stated, that he was induced to believe that this disease had a tendency, in its latter stages, to produce phenomena connected with a diminution of the globules of the blood. Some modifications in the constitution of the blood, during rheumatic fever, had been already observed; it had been ascertained that, at an early period of the disease the fibrin is increased; but it would appear that, subsequently, there is, in many instances, a diminution of the colouring matter. The attention of Dr. O'Ferrall was first called to the subject by observing that, in cases with endocardiac complications, after the employment of depletion and mercury, a cardiac bruit of a different character from that which originally presented itself, continued to persist, notwithstanding the steady employment of the usual means for subduing inflammatory action. By-and-bye, cases terminating fatally came under his observation, in which, although this bruit was present to the last, no morbid appearances could be detected in the heart upon *post-mortem* examination. Afterwards, he found that a rale

musicale in the cervical vessels very constantly accompanied this peculiar cardiac bruit; and he was led to suspect, that after the subjection of the inflammation by bleeding and mercury, an anæmic condition followed the use of these remedies, which would require a very different treatment for its subdual. He accordingly ordered chalybeates, as in an ordinary case of chlorosis, and found the cervical and cardiac bruits to disappear under the use of this remedy. As yet, he imagined the anæmia to be due to the effects of the antiphlogistic treatment employed in combating inflammation; but during the last few years he has had repeated opportunities of observing, that a râle musicale in the neck, and a bruit accompanying the first sound over the aortic valves, very frequently coincide with the decline of rheumatic fever, in cases where no active and weakening remedies have been employed; and he has been thus led to the conclusion, that the natural tendency of the disease in its advanced stages is to produce a diminution of the hæmatosin of the blood, evincing itself by its ordinary physical phenomena.

This observation is one of very great practical importance, teaching us the necessity of discriminating between those cardiac sounds produced by the participation of the heart in the general rheumatic disease, and those arising from deterioration of the blood. The treatment in the two cases must obviously be of a totally different nature.

Medical Times, Sept. 15, 1849, *p.* 317.

17.—EMPLOYMENT OF MANGANESE IN ANÆMIC AND OTHER AFFECTIONS.—By M. Hannon.

Manganese and iron are almost constantly found united in the same minerals, and can be separated with difficulty. Again, iron is not always efficacious in chlorosis, and fails in curing anæmia arising from cancers, from tubercles, from prolonged and abundant suppuration, &c. In these cases, it cannot be the iron that is deficient in the blood, but some other ingredient; and it is probable that iron is united to manganese in the blood; and that cases of anæmia, unsuccessfully treated by iron, might be cured by manganese. M. Hannon first tried the effects of this agent on himself. He took at first a grain of the carbonate of manganese daily, increasing the dose to four grains by the end of the first week, and to eight grains by the end of the second. At the end of a fortnight, he experienced symptoms of plethora; the appetite increased, the pulse became stronger, and the colour of the interior of the eyelids was heightened. He then administered manganese to some anæmic patients; some of them experienced nausea for two or three days, after which the medicine was tolerated. In a short time, its beneficial effects became manifest in the increase of colour, in the fuller and more frequent pulse, in the energetic movements, and general improvement of the functions.

The presence of manganese in the blood was discovered by M. Millon, who presented a memoir on the subject to the Academie des Sciences of Paris. His observations have been confirmed by M. Hannon.

[Several illustrative cases are given. The first mentioned is one of extreme chlorosis, in which the patient was sent into country air, and took iron for some time, without benefit. We are told that]

The patient was then directed to take one of the following pills daily before breakfast, and another before dinner: Extract of cinchona, carbonate of manganese, of each a drachm. Mix and divide into four-grain pills. After she had used these pills for a fortnight, the cheeks and conjunctivæ regained their colour, and the swelling of the feet disappeared. The following pills were then ordered. Sulphate of manganese, carbonate of soda, of each a drachm; fresh charcoal, honey, of each a sufficient quantity to make a mass, to be divided into four-grain pills. A fortnight after the employment

of this medicine, the bellows-sound had disappeared; the pulsations of the heart were strong and loud; and an energetic impulse was felt on applying the hand. There was no syncope; and the appetite had returned. The dose of the pills was increased; and a month after, menstruation occurred, and the patient became plump, and able to bear much exertion. She digested and slept well—in a word, was cured.

[Another case is that of a young lady affected with phthisis:] iron with opium, was prescribed; but it increased the cough, and brought on obstinate constipation. Syrup of the phosphate of manganese was then given, with cod-liver oil; the latter being added rather to prevent the contact of air with the manganese, than from any expectation of its producing good effects. The constipation ceased; and the cough became more bearable, and ceased in a fortnight. The patient then began to recover *embonpoint*. A month after the knuckles assumed a very remarkable brick-red colour, which has continued up to the present time—a period of nearly a year and a half. This patient took three *gros* (216 grains) of phosphate of manganese, in doses of three grains daily.

Madame R. was affected with cancer of the uterus. She complained of remittent pain in the hypogastric region, and suffered much while at stool. In the evening, she was troubled with severe lancinating pains, which often continued through the night. She was excessively weak, and of a pale yellow hue. She was troubled with palpitation, and a *bruit* was heard in the carotid. The feet frequently swelled. Syrup of the iodide of manganese was given with syrup of horse-radish, for several months. The pains did not leave her, but the anæmic appearance completely disappeared. To calm the pains, opium, with extract of hemlock, was prescribed; and the patient became apparently cured.

Mademoiselle M., aged 14, of a scrofulous constitution, had glandular enlargements in the neck, ulceration of the transparent cornea of the left eye, and caries of the first phalangeal bone of the index finger of the right hand. Being the daughter of a peasant, she had lived exclusively on vegetable food; but was ordered to take meat, and to drink beer. Syrup of the iodide of manganese was given in doses of a spoonful two or three times a-day. Under the influence of this, and her improved diet, she became less lean; soon after, the cornea regained its transparency, having been washed with a lotion containing gr. ss. of nitrate of silver to an ounce of distilled water. The suppuration of the carious bone ceased, and the finger was cured.

M. G. B., aged 28, had been treated with mercury for some years, for constitutional syphilis. The bones were sound; the skin was affected with all kinds of eruptions; the tongue had long been the seat of an obstinate tumour; and there were syphilitic ophthalmia and iritis. Fumigation and iodide of potassium were persevered in for several months, but without effect. Iodide of manganese was then given, with syrup of sarsaparilla; and in a month, the patient was completely healed. He was directed to continue the use of the manganese; and, as he has not since applied for relief, it is probable that he has had no relapse.

These cases have been selected from a number of similar ones, and show the efficacy of the new remedy proposed. Manganese has in all cases produced a more rapid effect than iron, in cases of simple anæmia. In the forms of anæmia cited, all the cases had resisted iron, and all yielded to manganese. The other cases are respectively of phthisis, cancer, scrofula, and syphilis;—all inducing almost irremediable cachexia, and all rapidly alleviated by manganese. The effects of the manganese, as observed in one case, (phthisis) are remarkable. Iron seldom produces a similar result; if it improves the state of the blood, it increases the cough; so much so, that many practitioners abstain from its use in phthisical cases. In all the scrofulous cases, the iodide of manganese, by its salutary and rapid influence, was proved superior to the iodide of potassium. The persistance of the cures obtained by manganese, in comparison with those produced by

from, is very remarkable: no cases of relapse have been observed by M. Hannon. The quantity required to be taken, in order to produce the desired result, is far from being so great as that of iron.

London Jour. of Medicine, Sep. 1849, *p.* 871.

13.—SCURVY AT YORK FACTORY.—By Dr. W. Smellie.

[York Factory is a settlement on Heyes' River in Hudson's bay, and it appears that an outbreak of scurvy occurs there annually among the European settlers, while at several other settlements in the neighbourhood, the circumstances of which appear similar, the disease is unknown. On a reference to the diet used at York Factory, it appears that *kitchen vegetables are not eaten at all, except at the officers' mess; and amongst the officers Dr. Smellie has not seen a single case of Scorbutus.*]

But, says Dr. Smellie, why are Fort Churchill and Severn House exempted from the disease, seeing that the diet of these establishments is equally deficient in vegetables? The theory of Dr. Garrod, which supposes the chief cause of scorbutus to be a deficiency of potash in the diet, and that a supply of this alkali in the form of its salts will be found an unfailing anti-scorbutic, appears very plausible at first, when we consider that the pure citric acid is inert in scurvy; but the table of the York Factory rations shows that the great proportion of the daily food consumed is not wanting in that alkali; and it may likewise be necessary to state, that these rations are alternated one with the other during the year. As to potash of itself proving antiscorbutic, I may observe that I had a patient, a few months ago, who took scurvy while he was taking daily nine grains of hydriodate of potash for a rheumatic affection of the joints. Neither are the rations deficient in nutritive azotised matters, the want of which is supposed by Professor Christison to be the cause of this disease.

Dr. Anderson says—"Food appropriate to man must consist of three parts—the nitrogenous, to nourish; the non-nitrogenous, to produce the extra heat required; and the third element to aid in the assimilation of these. This element is furnished by the various usually more or less acid juices contained in vegetables and fruits. In favourable circumstances man may dispense with them, and live in tolerable health, but withal obnoxious to disease; and if he be weakened, as by confinement or depression, or previous disease, or if the nourishment in the food be scanty, scurvy comes on." This is a guarded and correct statement of the case; but Dr. A. has gone too far in describing the antiscorbutic property of milk to the lactic acid developed during its digestion. Other vegetable acids found during the changes which vegetable matter undergoes, have not the same effect; why should the acid produced in badly fermented bread not be equally efficacious as an antiscorbutic? The individuals in this establishment, who use chiefly sour bread, do not on that account enjoy immunity from scurvy.

It appears then, that "in favorable circumstances, man may dispense with the use of succulent vegetables or fruits, and live in tolerable health," —as is evident from the condition of two of these settlements on the coast; but the nature of these favorable circumstances still affords matter for inquiry. The water appears in some degree to predispose to scurvy; because, when the disease comes on early in the season, before the frost relaxes, it invariably shows itself first among those engaged in procuring timber, at the distance of some miles, where they lodge in a hut from October till April, and where the water is more of a swampy and stagnant nature than the river water used at the factory. This is the only point in which their circumstances differ, as their rations are entirely the same, and their accommodation comfortable, and in some respects more salubrious than at the factory—their dwelling in the woods being less crowded and more cleanly.

The situation of York Factory is proved to be a very insalubrious one; but the particular cause of this I am unable to determine. It is certainly a swampy district, and were it not fortunate in having eight months of the twelve of continued frost, would probably become a perfect lazar house; but the state of the system induced by residence here, is not that commonly resulting from marsh miasmata; and it prevails as much during the frosty season, when several feet of ice must be bored to reach water, as when the swamps are open. During the first twelvemonths of a residence at this place after arrival from Europe, with some few exceptions, a person becomes stouter and more healthy in his aspect; but after that period, he generally assumes a sallow and cachectic appearance, with a predisposition to dyspeptic disorders, and bronchitic affections. Very few Europeans can maintain tolerable health for a longer period than five years; and, indeed, I would consider three years' continued residence to be as long as was safe for any individual of ordinary robustness. There are some persons, however, who have resided here for a great number of years consecutively, and have maintained tolerable health; some have even become corpulent; but all are sallow and cadaverous in their complexion, and time is soon traced in their features. It is very remarkable how much a year's residence in the interior improves the complexion, and apparently renews the youth; and those who have for any time resided in the interior, are apt to suffer more from a return to the sea-coast than even individuals fresh from the eastern world.

This state of the system induced by residence at York Factory, does not obtain at Fort Churchill and Severn House, the latter of which is similarly circumstanced as to diet, topography, and climate, and the former differs only in respect to its topography. With these facts, then, before us, it still seems difficult to determine why scorbutus should prevail at York Factory, and be unknown at the other two places; and all that has been written on the causes of this disease, does not lead to a solution of the enigma. Dr. Anderson's view, that "when a man is weakened by confinement, depression, or previous disease," he becomes more predisposed to suffer from scorbutus,—"when he is denied a sufficiency of succulent vegetable matter, or any other of the three things necessary to health,"—comes nearest to an explanation; but why, then, should individuals fresh from Europe, and during their first year's residence in this region, when in other respects they appear to improve in health and robustness, be the first affected with the disease. *Monthly Jour., Sept., 1849, p. 166.*

19.—OBSERVATIONS ON GOUT.—By Dr. W. Gairdner.

[From a work by Dr. Gairdner on gout, a writer in the Medical Times extracts the following observations on the treatment of that disease. Speaking of the terminations of gout, he says.]

One of these is apoplexy. The same disposition to the deposit of earthy matter, which is so manifest in the articulations of the limbs, is equally evident in the arteries and veins. Their friable coats can no longer bear even the diminished impetus of the blood. But, though the heart is now acting with less energy, the pressure of the circulating blood is, for various reasons, oftentimes greater than before. The limbs and moving powers, it is true, have diminished in bulk, but the belly is more protuberant. Fat has accumulated around the great viscera, which, joined to the congested state of these organs themselves and the impeded circulation through them, forces an unnatural flow towards the head and brain. The records of medicine are full of examples of apoplexy, consequent on, and arising from, gout.

Another termination of gout is menorrhagia to women at the age when they usually cease to menstruate. This is very frequently seen in a mitigated de-

gree. As it is generally at this period of their lives that women are attacked by gout, the discharge of blood often serves the purpose of a vicarious disease and a cure. It generally alarms them much. There are cases, however, in which they are very justly alarmed. The loss of blood goes the length of extreme and dangerous flooding. But such cases are rare, and generally occur in women of loose fibre, of indolent life, and of self-indulgent habits in matters of diet.

The same observations will apply to the case of bloody discharges from the bowels,—a far more frequent termination of gout. Hemorrhoidal bleedings are very profuse, but they give less alarm, though they are liable to be confounded with hemorrhage from the vessels of the portal system, which latter are characterized by their dark fluids, of the colour and consistence of pitch. These terminations—apoplexy, menorrhagia, hemorrhoids, and melæna,—are but varieties of the same affection. The seat is different, the disorder is the same. Hæmaturia is often mentioned as a consequence of gout. It is rare, even as a symptom. I never saw it terminate the disease. Hemorrhoids, indeed, and menorrhagia, though they frequently put an end to gout, seldom do so after the manner of apoplexy and melæna, by putting an end to life, but by bringing on the next, the most common and the most alarming occurrence in gout, viz., dropsy which now claims our notice.

The most usual forms of dropsy in gouty subjects are hydrothorax and ascites, caused by the imperfect functions of the great excretory organs, the liver and the kidneys in this, and by the disturbance of the heart in that form of the disease. General dropsy, or anasarca, is much more rarely seen in gout. It cannot surely surprise any one, that a disease which has its principal seat for many years in the central organ of the circulation, should terminate at last in dropsy. The commencement of the dropsical affection is obscure, and the attack often evanescent. It is very common to observe a manifest fluctuation, which has disappeared the next day. A similar remark may be made regarding the water on the chest. It is not unusual to see a gouty patient oppressed with what he calls his asthma, and to receive plain indications, through the stethoscope, of the presence of liquor on the chest, and yet to find these symptoms disappear in a few hours. This is easily explained by relief given to the action of the heart.

[With reference to the treatment of gout, Dr. Gairdner, while discarding ordinary bloodlettings, recommends the removal of from three to six ounces of blood. He says that the abstracting this quantity of blood does not weaken the system, but acts as a tonic, and supplants the use of purgatives, which are often injurious. On the subject of purgatives, Dr. G. says,]

For some years past I have made little use of the neutral salts as aperients in gout. The profuse watery evacuations to which they give rise are, I think, injurious. The warm, and even the more powerful vegetable aperients, such as senna, rhubarb, aloes, jalap, and scammony, seem to me far better adapted to the constitution of the gouty. They may be given with great advantage in the form of tincture, as also associated with the warm aromatics and tonic bitters.

[The *reviewer* recommends, as an experient in gout, a combination of sulphur and sulphate of potash. He says.]

Ten grains of *pure* sulphur, (not the admixture of sulphur and sulphate of lime, most commonly called sulphur,) an equal quantity of sulphate of potash, with, occasionally, the addition of five grains of rhubarb, form a combination which we are sure will not disappoint in these cases.

[Dr. Gairdner finds that the uric acid condition of the urine is speedily changed by the administration of the alkaline phosphates, tartrates, and citrates, while such a change takes place, not at all, or to a very slight degree, under the use of the pure alkalies and their carbonates. Neither Dr. Gairdner nor the *reviewer* concur in the common opinion, that to get the full effect of colchicum in gout, we must have griping and purging, but agree that]

Colchicum never more effectually relieves the patient than when it acts silently and peacefully, without producing any evacuations whatever, or in any way disturbing the patient's comfort and ease.

Med. Times, July 21, 1849, *p.* 59.

20.—USE OF LEMON JUICE IN RHEUMATISM.—By Dr. G. O. Rees.

Dr. Rees directed attention, some time ago, to the beneficial effects of lemon-juice in acute rheumatism, and he has more recently put forth, in the form of a pamplet, the details of eight cases of this disease, successfully submitted to the new treatment. He considers the lemon-juice superior to colchicum in its power of affording early relief to pain, subduing fever, and shortening the duration of the disease, and the cases recorded, so far as they go, undoubtedly warrant this statement. But, with a disease so capricious in its nature as acute rheumatism, a very extended experience is necessary to arrive at a correct estimate of the value of any new method of treatment. It so often happens that a number of severe cases, occurring consecutively, get well with unusual rapidity under all kinds of treatment, that we are led to attribute the recoveries to some accidental peculiarity in the nature of the disease itself, and not to the treatment employed.

The form of rheumatic disease in which the greatest benefit would appear to have been derived from the use of lemon-juice, is acute rheumatism; and that form of rheumatic affection involving the smaller as well as the larger joints in acute inflamation, known as rheumatic gout. In cases of pure gout, in which the inflamation is high, it is said that great advantage has been obtained, while in sub-acute and more chronic forms of the disease, the same marked benefit has not been experienced. Nor is it found in acute rheumatism that benefit accrues from continuing the remedy when the inflammatory symptoms have been checked, and debility remains.

In doses of half an ounce to an ounce thrice daily, the lemon-juice appears to exert a marked sedative effect on the circulation; in one case, the pulse, which was 120, and full, was after one day's treatment reduced to 75, and rendered at the same time smaller; in another case, the pulse, which was 110 when the lemon-juice was first given, was in two days reduced to 100, and in four days 74. If we can rely on results obtained in one experiment, this action is manifested also in the healthy body. A clinical clerk took one ounce of the juice three times a day for three days, and carefully noted his pulse, which was naturally full, and 75 in the minute. After five doses the pulse became much weaker and more compressible, and numbered 70 in the minute; conditions accompanied by a feeling of general depression. On the third day the pulse became as low as 66, and was very small and compressible. The urine was always acid, and also natural in quantity till the third day, when it increased somewhat; the specific gravity was then 1017, and there was a deficiency of lithic acid.

In the cases of rheumatism related by Dr. Rees, the urine was never rendered alkaline by the use of the lemon-juice, and in one case, in which the urine was alkaline before treatment, it became acid after the juice had been employed. We think it premature to speculate on the *modus operandi* of the drug, until its utility shall have been confirmed by more extended experience, and before we are in possession of more accurate knowledge as to its physiological action, more especially in reference to its effects on the urine, and the quantity of solids contained in that secretion.

Monthly Retrospect, August, 1849, *p.* 157.

[In a discussion at the London Medical Society, several gentlemen bore testimony to the efficiency of lemon-juice in the treatment of rheumatism. Mr. Headland stated that he had found the same remedy most useful in cases of obstinate *dysmenorrhœa*. After which Dr. Golding Bird said that he]—

Hoped the time was not far distant when we should treat disease according to its essential characters rather than in reference to its name. Now, the cases mentioned by Mr. Middleton evidenced no paradox in regard to the treatment of rheumatism by alkalies and acid; for the lemon-juice and the carbonate of soda were essentially the same in their effects upon the system. He then proceeded at some length, which we regret our space does not allow us to report fully, to illustrate the effects of a morbid matter in the blood in the production of a train of symptoms which were attributed often to another cause; or rather, the condition of the blood was not looked upon as the real and essential link in the chain of causation. Yet this fact could be evidenced by an examination of the secretions, particularly the urine. He illustrated his views with much force and ingenuity by a case of ague and a case of rheumatism.

In both these there was a *materies morbi* in the blood, which, as the disease receded, was relieved by being carried off by the kidneys, a larger and larger quantity of solids being found in the urine. This he had always found to be the case in Guy's Hospital, in which he had treated these diseases on the principle of removing the *materies morbi*. He believed that a similar condition of the blood to that which obtained in rheumatism was present in the patient affected with dysmenorrhœa mentioned by Mr. Headland. Now, in rheumatism, how were we to get rid of this morbid matter in the blood? Opium would remove it to some extent; colchicum would remove it. But it was taking a more common-sense view of the subject to employ some remedy which would eliminate the morbific matter from the circulation at once, by carrying it off by the urine. How, then, were we to effect this? Why, in acute rheumatism, by the administration of cream of tarter, citrate of potash, lemon-juice, or carbonate of soda. There was little difference between the action of these neutral salts; but lemon-juice, which was a supercitrate of potash, was more quickly absorbed into the blood, and consequently more active in effecting a cure. He had, however, in his own practice, been in the habit of employing the acetate of potash in these cases. This salt, with a mixture of sugar, water, and essence of lemon, acted with marvellous rapidity. In addition to this, given every four hours, he administered five grains of the soap pill, with opium, night and morning; for this not only relieved pain, but prevented the other remedy being carried off by the bowels. These, with the vapour-bath, constituted his treatment of rheumatism, and the result had always been successful. Soda and lemon-juice equally produced an alkaline condition of the blood, but he preferred the acetate of potash, as it was not liable to be neutralised by the presence of acid in the stomach. In respect to the treatment of ague, he never began at once with an anti-periodic. He always disgorged the liver by the employment of mild mercurials, and then some quinine. He mentioned one case, however, in which the quinine failed; he then gave the acetate of potash, and the case was cured. By these remedies we immediately altered the character of the blood, and cured the disease—a much more practical and philosophical mode of proceeding than that of treating disease according to name. *Med. Gaz., June 16, 1848, p. 1044.*

[The Editor of the *London Journal* remarks:]

Dr. Rees has made out, quite satisfactorily, the efficacy of lemon-juice as a remedy in rheumatic diseases. It seems to be one of those remedies which act by eliminating morbid matter by the kidneys; and therefore acts beneficially very much in the same way as the acetate of potash or colchicum. In March last, in a severe case of rheumatic scarlet fever, we saw very marked relief to the pains from the following perscription, which was suggested by Dr. C. J. B. Williams. It was not specially for the rheumatism that the mixture was given; but when it was suspended, the pain became, in a few hours, as severe as before it had been taken. The draughts were given with a considerable excess of the lemon-juice, as they seemed, when so administered, to prove very grateful and soothing. To

the citrates of ammonia and soda, and to the free lemon-juice, collectively, we ought, most probably, to ascribe the relief to the rheumatism; and we would be very much inclined to suggest a series of comparative experiments with the lemon-juice alone, and with it along with soda, potash, or ammonia individually. The following is the formula used in the scarlet fever case already referred to:—℞. Sodæ sesquicarb. ℥iss; ammoniæ sesquicarb. ℥ss; syr. tolutani, ℥ss; aquæ ad ℥viij. M. Sumat cochlearia duo ampla quartis horis c. succi limonis cochleari medio.

London Jour., Oct., 1849, p. 327.

Dr. THEOPHILUS THOMPSON, in reference to the discussion at the meeting of the society, in which it was stated that lemon-juice and acetate of potash were identical in their mode of action in rheumatism, related the case of a gentleman who, whilst taking acetate of potash for effusion into the pericardium consequent upon pericarditis, was seized with articular rheumatism: this increased in severity so long as the medicine was continued. The urine contained a large quantity of lithates; the heart symptoms abated. Lemon-juice was substituted for the potash, and in a few hours all the rheumatic symptoms had disappeared, the urine having become copious and clear. The case illustrated the fallacy of founding a theory on a few cases.

In the discussion which followed, Dr. Thompson stated that he should trust to lemon juice only in such cases where the constitution would not bear stronger remedies. *Med. Gaz., Oct. 19, 1849, p. 633.*

21.—PHOSPHATE OF AMMONIA IN RHEUMATISM.

This remedy was fairly tried by Dr. Pepper in the spring of 1846. It was given in doses of from ten to thirty grains in acute and subacute rheumatic cases. It was not found to justify the theory of Dr. Heckler, of Baltimore, who believed it to have specific powers, by a chemical agency; but patients recovered under it, though not rapidly, so as to convince me that it might prove a useful adjuvant, and, sometimes substitute for colchicum. Its alkaline composition and laxative action are sufficient to account for this. In 1847 one case at least occurred in which its use was followed by recovery, where the attack had resisted other plans of treatment. In some patients diarrhœa, and in others nausea was produced; but generally it seemed a mild remedy. The vehicle preferred was aq. cinnamon.

The curative power of colchicum was found to be far from infallible. In some, aided by depletion, its effect was immediate; others were scarcely improved whilst taking it for weeks.—*American Journal of Medical Sciences. Med. Gaz., June 1, 1849, p. 926.*

22.—LOCALIZATION OF MORBID GROWTHS.—By Dr. W. H. WALSHE.

The tendency to become the seat of growths, as a class, varies greatly in the different tissues and organs. Thus while cellular tissue is their peculiarly favorite site, fibrous texture but rarely affords them a nidus. Again, the mamma, the ovary, the uterus are frequent, the lungs and brain much less common, sufferers. The tendency to become the seat of growths, as a class, varies in the different parts of organs. Thus, the pyloric end of the stomach suffers more frequently than the rest of the organ; the epididymis than the body of the testis. Certain organs, and certain parts of organs, have an excess of tendency to the formation of certain special growths. Thus, the uterus, the mamma, the stomach, the liver, are peculiarly prone to cancerous, as distinguished from other forms of growth; the bones are the chosen seat of enchondroma. And, again, cancer does not form indifferently in all parts of the uterus, but tends especially to invade

its neck; whilst fibrous tumours affect a preference for the body of the organ. The large intestine is a tolerably common seat of cancer; the small is very rarely implicated. Growths of different kinds exhibit different degrees of compatibility, as coexistences in the same body. Some growths, as cystoma and carcinoma, are sufficiently prone to appear in the same individual; others, as fibroma and carcinoma, are rare coexistences; none are actually incompatible.

British and Foreign Medico-Chirurgical Review, July 1849, p. 187.

23.—ON CANCER.—By Drs. W. H. Walshe and J. H. Bennett.

[We extract the following analyses of some points in the recent publications of Drs. Walshe and Bennett on cancer, from the British and Foreign Review. The following is the description given by Dr. Bennet: of the microscopic appearances of a specimen of true cancer of the mamma.]

"A thin section was removed from the centre of the tumour by means of Valentin's knife, and examined with a power of 250 diameters linear. It consisted of a meshwork of fibrous tissue, forming waved bands, arranged here and there in circles, varying in size. Some of these were very large (one-fifth of a millimeter in diameter), inclosing other circles, each of which was surrounded by several filaments of the fibrous tissue. Some of these circles contained numerous nucleated corpuscles crowded together, mixed with granules; others contained only a few, or nothing but granules. Here and there were to be seen several compound granular corpuscles. On adding acetic acid to the whole structure, it became more transparent. Many of the fibrous filaments became invisible, and such as remained were studded here and there with elongated nuclei. The walls of the corpuscles were partially dissolved and rendered very transparent, whilst their nuclei were unaffected. The cream-like fluid, which could be squeezed from the surface of the tumour, contained—1st, nucleated cells; 2d, compound granular corpuscles; 3d, numerous granules. The nucleated cells were of a round or oval form, varying in size from the 1-100th to the 1-50th, or even 1-40th of a millimeter in diameter. Some contained one nucleus: others two of an oval form, varying in the longest diameter from 1-100th to 1-75th of a millimeter. Some of these nuclei contained one nucleolus, and others two. On the addition of acetic acid, the cell-wall was rendered more transparent; the nuclei were unaffected, and appeared in consequence more distinct."

This examination presents, according to Dr. Bennett, a good example of the true cancerous structure; he selects this case, indeed, as the standard of comparison; and the cells described in the extract we have just given, he designates as *par excellence*, "cancer-cells."

Another microscopic examination is of a different species of tumour of the breast. In this case the tumour was of great size, very hard and painful, the nipple unretracted, and the axiliary glands unaffected. The physical appearance of the tumour was that of an amber-coloured gelatinous mass, passing into an opaque, white, firmer fibrous mass. "The amber-coloured gelatinous portion was composed principally of a structureless blastema, containing here and there fibres of extreme delicacy, which, with careful management of the light, might be observed to assume the form of fusiform corpuscles. In the midst of the jelly-like blastema, at different depths, were a number of compound granular masses. Some of these, when brought into focus, presented a number of granules, varying in size from the 1-500th to the 1-200th of a millimeter in diameter, which highly refracted light, and were aggregated together without being inclosed in a cell wall. When out of focus, these masses presented a brownish dark shadow. Where the amber-coloured jelly was passing into the white substance, the fusiform cells became more numerous, and were mingled with

a number of oval nucleated cells of great delicacy, varying in size, and especially in length, some being caudate, others spindle-shaped. A thin tion of the densest part of the white portion presented a fibrous struc wholly composed of fusiform cells, which, on the addition of acetic became more transparent, whilst the nuclei were rendered very distin This tumour seemed to consist of a simple blastema, in which fibrous t was forming. It contained no cancer-cells, but apparently only the c mon elements of exudation.

Let us examine how far the observations of Dr. Bennett will enable u determine more satisfactorily than heretofore,—1, how to recognize ca before and after death; 2, the physiological and pathological history of cer; 3, its appropriate and most successful treatment.

1. *Recognition of cancerous growths before and after death.*

Dr. Bennett considers that the common subjective and objective sy toms, such as lancinating pains, unequal surface, hardness, elastic feel ceration, affection of surrounding parts, constitutional cachexia, and re of the growth after excision, are symptoms which are not peculiar to can being occasionally absent in tumours which are undoubtedly cancerous, being present sometimes in epidermic, fibrous, or fatty growths of the m innocent nature. Accordingly he considers that an accurate microsc examination, taken conjointly with such evidence as may be afforded the symptoms and progress of the case, is absolutely necessary befo correct diagnosis can be given. What, then, are the microscopic charac of cancerous, as distinguished from cancroid growths?

Dr. Bennett's opinion may be given in a few words: if a tumour prese among other elements, certain cells of definite aspect, and is at the s time situated in parts which render it impossible that these cells can be thelial, epidermic, or cartilage-cells, that tumour must be cancerous.

We may shortly condense the account which Dr. Bennett gives of t characters. The cancer-cells are of variable shape, round, oval, cau heart or spindle shaped, &c.; of variable size, from the 1-100th to the 1-3 of a millimeter; nucleated, singly, doubly, trebly, or more; generally cleolated; colourless, or with melanic deposit; increasing commonly on endogenous plan, and thus often presenting the phenomena of parent-ce containing two or more generations of younger cells; occasionally increa ing by division of the nucleus, but never by division of the cell-wall, or b splitting-up into segments of the mother-cell. The cell-walls are dissol by acetic acid, the nuclei corrugated, and their margins thickened. C cer-cells never pass into fibres, they become caudate, or throw out poin prolongations, but the transformation proceeds no farther. They are c tained in great abundance in the white milky-looking juice which can squeezed from most cancerous tumours, and they are surrounded b greater or less quantity of a vicious fluid. Cancer-cells cannot be dis guished from young, plastic, epithelial cells, embryonal and cartilage ce

In this description Dr. Bennett agrees very closely with the account of same structure given by Lebert, Walshe, and Hannover. The chief dif ences are—1. That Lebert does not seem disposed to admit that can cells can be confounded with any other species of cell. 2. That Wal states that acetic acid does not dissolve the cancer-cell wall, but mer renders it transparent, and that it can be restored by using an iodure solution of iodide of potassium. 3. That Dr. Bennett seems inclined doubt the exogenous mode of formation of cancer-cells, although the co paratively few cells of scirrhus are said by Dr. Walshe to increase mai in this way.

Disregarding, however, these differences, and assuming that the char ters of the cancer-cell given above are correctly detailed, can we by me of these microscopic characters distinguish cancerous from other tumou

1. We have already mentioned that some normal cells, as of young e thelium and cartilage, are so like cancer that Dr. Bennett says they can

ys be separated. Thus, in the eighth observation he reports a case of
er of the cheek: a milky fluid containing cancer-cells could be pressed
the tumour; cancer-cells were found in the loculi formed by the hy-
rophied, curled, elastic filaments of the dermis, and in the meshes of a
ee matrix situated beneath the skin. In this case Dr. Bennett says,—
The epidermic scales offered a striking resemblance to some forms of
er-cell. I shall afterwards point out how epidermic and epithelial cells,
being steeped in water, or a thin serous fluid, may exactly resemble, in
y essential particular, cancer-cells."
nd again, in the 49th observation an enchondromatous tumour of the
um and pubis was considered by all who saw it to be cancerous. It
partially softened; the softened pulpy matter contained cells, round,
ular, or caudate, with nuclei and nucleoli. These cells looked like
er-cells, but differed in the fact of acetic acid rendering the cell-wall
e opaque instead of more transparent. If, however, a tumour is found
distance from skin, mucous membrane, or cartilage, and yet contains
ncer-cells," then Dr. Bennett seems to consider their presence as abso-
y diagnostic. 2. Admitting this, it seems unfortunately certain, that a
ur may be truly cancerous, that is, may be connected with a peculiar
titutional taint, may be intractable, and disposed to run through a cer-
series of changes, and yet no distinctive cancer-cell can be detected in
tructure. Without entering into the numerous discussions on this
t, we may extract Dr. Walshe's statement, which is of course of the
est authority. Dr. Walshe writes thus,—
We have known growths which have destroyed life with the cachexia
ancerous disease, and clearly exhibited the local progress and naked
characteristic of encephaloid growths: which, nevertheless, were com-
d *of non-nucleated cells, undistinguishable from those of common exuda-*
-matter."
nd in an after part of the same article, the following series of proposi-
s are given:
1. Parent cells, containing within them sub-cells having darker nuclei,
these in turn bright nucleoli, are strongly characteristic of cancer; but
e cells are rare in, and may be altogether absent, from scirrhus; ence-
loid in some phases of its growth may also be without them. 2. The
pelessly-caudate cell seems significant of cancer, but it may be absent
encephaloid, and is excessively rare in scirrhus or colloid. 3. A tu-
r may present to the naked eye the characters of encephaloid, be the
of interstitial hemorrhage, affect the communicating lymphatic glands,
in all respects the course of cancer, and nevertheless contain no cells, but
as are undistinguishable in the present state of knowledge from exu-
ve cells. 4. Nay, more, while a primary malignant tumour contains
e cells alone, the lymphatic glands, secondarily affected, may contain
pecial nucleated cells, spherical and shapelessly-caudate. 5. The true
form cell is an adventitious formation when it occurs in cancer, and has
diagnostic signification."
Although we are of opinion that there is no one constant microscopic
racter which will serve as an infallible mark of cancer *in all cases*, we
disposed entirely to agree with Dr. Bennett in attributing the highest
gnostic value to "cancer-cells" when they are present, and are free from
biguity. They will be present also in the vast majority of true cancer-
growths; still we cannot admit that their absence negatives the idea of
cer. We agree also entirely in the judicious observations made by Dr.
nett, relative to the use of the microscope as a means of diagnosis
ing life, before the tumour has been meddled with, and when doubt
ists as to its real nature. M. Kuss, of Strasburg, has proposed to extract
portion of a doubtful tumour with an exploring needle, and to examine
roscopically the portion thus cut off. In the case of open sores, a
roscopic investigation of the discharge will often clear up all doubts as

to the cancerous nature of the disease, by detecting at once the characteristic cancer-cells. Admitting that the microscopic examination of a tumour is of great value in the majority of cases, but may yet in some instances be insufficient to decide the question of its nature, are there any other circumstances which, apart from the more ordinary symptoms of cancer, may serve as diagnostic marks?

Dr. Walshe attributes considerable importance to the fact of a cancerous tumour yielding a milky albuminous juice on pressure: he says that in ultimate analysis this is the single character least likely to deceive us. Occasionally, however, no fluid can be expressed; in Dr. Bennett's thirty-fifth observation, a cancerous tumour of the mouth gave no fluid on pressure, although numerous true cancer-cells could be obtained by scraping. And in some cases, enchondroma gives by pressure a milky juice.

Another character by which it has been attempted to distinguish cancer from all other growths, is its property of infiltrating the tissues among which it lies. It extends its meshes in all directions, and in some cases, as in the liver, produces a transformation of the adjoining tissue into carcinomatous matter. Clinically, this character, as Dr. Walshe remarks, is of no value, as cancer is not necessarily infiltrated, but is often abruptly circumscribed, or even, in very rare cases, encysted; and even if infiltrated, this cannot always be recognised during life: but nosologically, this is a characteristic of great significance. Dr. Bennett follows Dr. Walshe in attributing great importance to this peculiarity. Yet a doubt may still be raised whether this infiltrating property is limited to cancerous growths; whether it may not belong to fibrous tumours. Dr. Walshe, in alluding to the reported cases of infiltrating fibrous tumours, intimates that infiltration with common exudation matter, has been mistaken for fibrous infiltration. We have, however, knowledge of one case, in which a tumour, whose fibrous nature was accurately determined, had infiltrated like cancer into the adjoining parts. It has been asserted, also, that it is a peculiarity of cancerous growths to return after extirpation; and there is little doubt that there is a far greater liability to return, than in the case of growths of simple nature. But, Dr. Bennett's observations give increased support to the opinion which has been for some years gaining ground, that fibrous, epithelical, and even fatty and enchondromatous growths, return after excision much more frequently than is generally believed. It appears, however, that there is no microscopic character absolutely indicative of cancer, although the occurrence of diagnostic cell-forms is extremely frequent; that a cancerous tumour cannot either be distinguished in every case by the expression of milky juice, or by possessing alone the power of infiltration.

2. *The physiological and pathological history of cancer.*

In Dr. Walshe's great work on cancer, the origin of cancer is laid down with much precision and clearness. The first step in a cancerous formation, is an exudation of a peculiar blastema, which, in our present knowledge, can be distinguished from common nutritive blastema only by the difference in the resulting organized forms. Such a blastema, as a general rule, exudes completely from the vessels, seldom is arrested in the thickness of their walls, and very rarely indeed, if ever, remains within the vessels themselves. This cancerous blastema, thus derived from the blood, necessarily implies that the blood itself is in an abnormal state, when it can furnish so unhealthy a substitute for the ordinary secretive and nutritive blastema. And this inference is corroborated by almost all the facts we can bring to bear on this point, and which all tend to the conclusion, to use Dr. Walshe's words, "that a cancerous tumour, under all circumstances, is but the local evidence of general vitiation of the system." Subsequently, the cancerous deposit may remain quiescent, the cancerous cachexia which produced it having passed away; or may advance with greater or less rapidity, according to the intensity of this cancerous diathesis. If it proceed, it is destructive or malignant, partly in proportion to the degree of this pre-

ceding constitutional disease, and partly in proportion to the infiltrating power possessed by the cancer-tumour in the particular individual. Finally, the local disease itself reacts on the constitution, and impresses a deeper and more advanced influence on the general system.

These views are identical with those held by Dr. Bennett:

"The great majority of facts with which we are acquainted," he writes, "lead to the conclusion that the filaments, cells, and fluids, which together make up the tissue I have called cancerous, originate in a coagulated exudation. This is poured out exactly in the same manner as all other forms of exudation, viz., by enlargement of the capillaries, their repletion with blood, and the transudation through their coats of the transparent liquor sanguinis, which coagulating outside the vessel constitutes an exudation, more or less solid."

The following quotation expresses his views very clearly, and proves their exact identity with those held by previous writers:

"The exudation thus poured out, which I have called cancerous exudation, must differ from the exuded matter in what is called inflammation or tubercle; but in what that difference consists we are ignorant. The characters given to the blood by Rokitanski and Engel, to distinguish what they have called the cancerous dyscrasia, are so vague and uncertain, as to have no real value. Neither is there any proof that such dyscrasia consists in an excess of albumen (Engel) or of fibrin (Keller) in the blood. The latter takes place after all exudations. But although the present state of pathology does not warrant our stating positively wherein exudations differ, we cannot avoid seeing that their occurrence in various individuals produces very different results. Thus, if an exudation be poured out in a healthy individual, it produces a series of phenomena which we call inflammatory; if in a scrofulous individual, another series of changes called scrofulous or tubercular: whilst in a third person the result may be a cancerous growth. Every kind of reasoning must lead us to the conclusion, that these different changes and effects depend not upon the vascular system, which is the mere apparatus for the production of exudation,—not upon the nervous system, which leads to the necessary arrangement of that apparatus for the purpose, and not on the texture, which is the seat of the exudation, as that varies, whilst the cancerous formation is the same,—but in the inherent composition or constitution of the exudation itself. But here pathologists pause; once traced back to the blood, they are content, and they have not sufficiently taken into consideration that the blood itself is dependent for its constitution on the results of the primary digestion in the alimentary canal, on the one hand, and the secondary digestion in the tissues on the other."

Pursuing these views still farther, Dr. Bennett remarks, that a comparison between the characteristics of the cancerous, and what may be termed the simple or inflammatory, and the tubercular exudations, may lead us to some useful hints respecting the significance of each. Let us suppose that an individual in perfect health has from any cause (injury, irritation leading to inflammation, &c.) an exudation poured out into any part, which is plus the normal exudation required for the repair of the tissues; the further changes which occur in this vary infinitely according to the part, the degree of irritation, the rapidity or slowness with which the blastema is poured forth, &c. But one or other of what may be termed the healthy or normal changes occur; the exudation becomes the medium of adhesions, or is organized into false membrane, or accumulates in the interstices of organs, assuming a greater or less resemblance to them, and impeding more or less their functions, or it breaks down more or less rapidly into evanescent cell-forms, which are discharged at once from the free surfaces, or are eliminated from the body through the medium of further changes and different emunctories. The composition of this blastema no doubt varies infinitely within the healthy limits; and these variations are evidently not

dependent, for the most part at any rate, on any local condition of the part in which the blastema is exuded, but are attributable to the general condition of the organism, to the purity and excellence of its blood, which is the indication of the due performance of all the varied metamorphoses of the frame.

But if, instead of this healthy constitution, the individual be tuberculous or cancerous, then in certain organs the exudation emitted from any cause does not pass through this series of normal changes, but assumes one or other of the forms peculiar to the diathesis. Thus, in young subjects, and in persons of peculiar and defective assimilating power, the exudation is below the healthy standard. It attains imperfectly to any cell-forms, and is liable to rapid disintegration and complete loss of vitality. This is the tubercular exudation, and although it is poured out in its characteristic form only on certain organs and positions, yet we see enough to convince ourselves that a blastema poured out in other situations, as in accidental breaches of continuity, although it may not possess the tuberculous character, is yet often evidently different in some way from the reparative blastema, which would be effused in a perfectly healthy condition of the system. In an older person, in whom the assimilating functions are also deranged, although in a different manner, the blastema poured out may be entirely dissimilar to the tuberculous blastema. It may have a tendency to the production of very highly-developed and reproductive cell-forms, which grow with great energy and rapidity, and retrograde and disintegrate slowly and imperfectly. Between this diathesis and the former there is therefore almost an antagonism; they can hardly exist in the same person, and the presence of the one may be said almost necessarily to exclude the other. And here the hypothesis we have given above, for at present it is no more, agrees with the facts of the case; for it is well known that tubercle and cancer occur at different periods of life, and affect different organs, while when recent they are rarely found associated.

Dr. Bennett surmises that tubercle may be connected with some derangement in the function of the primary, and cancer with some derangement in the function of the secondary digestion; and he points out that cancer commences to occur at that epoch of life, when the excretory functions begin to lose their activity.

British and Foreign Medico-Chirurgical Review, July 1849, p. 189.

24.—DELETERIOUS EFFECTS OF CARBONACEOUS COMPOUNDS ON THE SYSTEM.—By Dr. C. M. Miller.

We are told that the human body is made up of a certain number of gaseous and solid bodies, and that these, when arranged in a particular manner, go to form the materials of which the healthy body is composed; why then, I would ask, should not an increase or decrease of any of these matters produce disease? This would appear self evident, but it does not seem to have had that due weight given to it to which it is entitled.

Carburetted compounds, whether accumulated in the system in a solid form, or applied in a gaseous, are equally poisonous. I purpose, then in the first instance, to enumerate some particulars of diseases, in which there appears to be an opposite effect produced in the system, and seeing how far these views are carried out, and whether any or no practical bearing can be derived from the investigation. First, then, we may notice the antagonism which is said to exist between phthisis and intermittent fever; and here we have *in limine*, in the first, a loss of carburetted hydrogen; in the second, an accumulation of carburetted hydrogen; and I would ask, may not the spleen be looked upon as an emunctory, aiding and assisting the liver, by receiving the superfluous quantity of carburetted blood, until the latter organ is enabled to relieve itself. I know a somewhat similar view has been

mooted before; but not regarding the spleen as a decarbonizing organ. I was led to this view by noticing, that in those cases where the liver, from disease, was unable to perform its function, there the spleen has been much enlarged, (vide Mr. Langstaff's Catalogue;) that in intermittent fever it is much enlarged, and it is found largest in those animals which live on the most highly carbonized matters, as the ox and sheep.

To return: the effects of naptha and cod-liver oil may be referred to their supplying the loss of carburetted hydrogen in phthisis, and not, I think, as Dr. Hastings says, with regard to naptha, to its acting as a solvent of tubercle.

But let us take the other side of the question. Is it not a fact that fevers of the worst description occur in the spring and autumn of the year, and more particularly in the autumn, when the largest quantity of decaying vegetable matter is covering the earth, and giving forth an emanation of carburetted hydrogen; and is it not also a fact that typhus and other fevers arise in the confined courts, alleys, streets, and places where the vegetable accumulations are allowed to remain, and where, although the quantity must be very great, yet can we detect it by no chemical tests, except with great difficulty? Dr. Garrod, in his excellent lectures, published in *The Lancet*, says, that in 10 000 volumes of dry air, there have been found four volumes of carburetted hydrogen, but does not say at what season this analysis was made. Mr. Taylor says, that about nine per cent. may destroy life in man. If it take so little to destroy life, surely a less quantity must act as a poison to a certain extent. We have never, I believe, yet had clearly explained what marsh miasma is; but does there not then appear already a strong concurrence between the two causes of disease.

In fevers, again, the secretions are stopped; the skin, the kidneys, the liver, refuse to act; and what is their action? Is it not the elimination of matters almost entirely composed of carburetted compounds?

Let us for a few moments take a view of some of the effects of disease on these several organs. With regard to the skin, it almost always sympathizes with the rest. But take the kidneys, and of its diseases the worst form, ischuria—what is the effect of a suppression of urine? Does it not produce typhoid symptoms, showing that a powerful poison has been absorbed into the system, enervating the nervous centres? Take jaundice: what are its symptoms? Do they not all indicate the same kind or nervous depression? Again, in fevers, erysipelas, and jaundice, when the liver does begin to act, there is generally, and indeed, most frequently, thrown off, a large quantity, of dark, and in many instances almost carbonaceous matter; and I have noticed that when this is the case the patient does well, but if it is retained the patient continues to suffer. It is on this principle that I consider we derive the benefit from the crisis of diseases: does not nature endeavour, in these diseases, to burn up, as it were, the superabundant carbon by increased respiration and pulsations; and is not the blood highly carbonized in fevers? Simon says, "in typhus the clot is very dark, almost black-red;" and in the inflammatory forms the fibrin is superabundant. Let us take an opposite condition, as phthisis. It has been suggested, I think with some degree of truth, that phthisis is antagonistic to ague. What do we observe here? A general loss of carburetted hydrogen in all its forms, colliquative diarrrhœa and sweats, increased breathing, and all conditions that will carry off the elements of fat from the system. It is true Andral says the fibrin is on the increase in the blood; but this, I think arises from the increased absorption, and the effort nature makes to repair the injury already done to the constitution. The advocates for the employment of cod-liver oil and naptha are, then, practically correct.

These are suggestions, and will require much practice to carry them to the proof, although, as far as fevers are concerned, I have myself tested their value with considerable success. And now to apply this theory to some diseases. Erysipelas occurs at the damp seasons of the year, when

vegetable matter is in large quantities decaying on the earth. We have spoken of the state of the secretion of the liver.

Cholera, again, occurs at those seasons and places where there is much vegetable decay going on; at least such is the case in this country; and in this disease the liver does not perform its functions. A quantity of light matter is poured out, known under the name of rice-coloured stools. My own conviction is, and it has been verified by my experience in English cholera, that the treatment is to stimulate the liver to renewed action, and not, as recommended in the public journals, to lock up the intestines with opium, astringents, &c. There is a poison in the system, and that poison must be got rid of.

Again to pass from disease to the ordinary habits of life with some persons. A full meal is taken at night, perhaps an hour before retiring to rest. See the quantity of solid matter that is taken into the blood; and what are its effects? It acts as a poison; the individual has heavy, almost lethargic sleep; or is restless and dreaming, showing that the nervous system is oppressed; he has no perspiration of much amount; rises with a dry, brown tongue, and, in some instances, slight sordes round the teeth; in fact, he is in a state somewhat similar to typhus; and from it he experiences no relief until he has a discharge which shall carry off the superfluous hydrocarbon. Again, after taking wine or spirits, the same thing occurs; and in delirium tremens the alvine discharges will frequently be nearly black. But in the case both of eating and drinking, if the party take sufficient muscular exertion to exhaust the hydrocarbon, he may remain for some time in comparative comfort and safety. When we take into consideration the vast qantity of carbonaceous matter which is daily taken into the stomach of even the most abstemious person, consisting of animal, vegetable, and fluid materials, and how much of this is superabundant, is it not feasable that this, if kept in the system by a suppression of the natural secretions which carry it off, should act as poison?

Mr. Taylor, in his work on "Medical Jurisprudence," says the symptoms of poisoning by carburetted hydrogen are,—"Vertigo, cephalalgia, nausea with vomiting, confusion of intellect, loss of consciousness, general weakness and depression, partial paralysis, convulsions, and the usual phenomena of asphyxia;" and how many of these symptoms do we find in the diseases already mentioned? In a greater or less degree, almost all of them.

If, then, it be not true that carburetted compounds are the poisons which are taken into the system, there is a verisimilitude about the whole which is very striking, and which is worthy of a much deeper notice than it has hitherto attracted. I believe that much more danger, and certainly much more disease, is attributable to the emanations from decaying vegetable, than from decaying animal matter; and in such a case it is more attributable to the carburetted compounds than any other. I state this more from experience than theory. During upwards of three years that I was connected with a public dispensary, and at which time I had nearly eight thousand cases under my immediate care, the severest were always those which occurred in situations where vegetable matters were allowed to collect.

It is interesting to examine what quantity of carbonaceous matter is passed off by the natural secretions of a person in health.

The kidneys secrete, according to Simon, a mean of 432 grains of urea in twenty-four hours. Now, on referring to the table at the end of Dr. G. Bird's work, we find that 100 grains of urea contain 19.99 grains of carbon. Now if, for convenience, we take the quantity passed at 450 grains, we have 89.95, or nearly ninety grains of carbon passed off by the kidneys. The quantity of uric acid is thirteen grains, or, for convenience, we will call it ten grains, giving 3.6 grains of carbon. The colouring matter of the urine is here left out of the question, but according to Dr. Bird, it is from forty to sixty grains, and this taken at fifty, will give carbon 29.2. There

is a great uncertainty as to the quantity of bile which is secreted during the twenty-four hours, but let us take it at one ounce, or 480 grains, say 500. This gives a further supply of 342 grains of carbon.

The perspiration carries off, according to Seguin, quoted by Bird, 107 grains of organic matter, mostly nitrogenous, but still, no doubt, there is some carbonaceous matter. Taking this at thirty-five grains, or rather more than one-third, we shall have the following total of carbon passed off in a healthy state of body:—

Urine	119 42
Bile	342.
Perspiration	35.
Total . .	496.42

or, in round numbers, 500 grains. If, then, even half this quantity be retained in the blood, have we not sufficient evidence of a large quantity of poisonous matter acting on the nervous system? Our plan of treatment becomes more rational, and we are enabled to place medicine on a much firmer basis, when such considerations as these are taken into account, in reasoning on the sources of disease. I purpose, at a future period, giving some cases in illustration of this theory. *Lancet, August* 4, 1849, *p.* 121.

NERVOUS SYSTEM.

25.—ON REFLEX SENSATIONS.—By Dr. R. B. Todd.

The physical change developed in the production of an objective sensation at one part, may give rise to what may be compared to a subjective sensation in another and a remote part of the body. The irritation of a calculus in the bladder will give rise to pain at the end of the penis, or to pains in the thighs. The object by which the irritation of the bladder is excited, cannot exercise any direct influence on the nerves of the penis or the thigh; through the nerves of the bladder it excites that portion of the cord in which both the vesical nerves, and the nerves of the penis and of the thigh, are implanted; and thus the latter nerves are stimulated at their central extremities through the influence of the peripheral stimulation; in other words, the physical changes excited in the first are reflected into the second.

Sometimes distant and apparently wholly unconnected parts may be affected in this way. Thus irritation of the ovary will cause pain under the right or left mamma; stimulation of the nipple, whether in male or female, gives rise to peculiar sensations referred to the genital organs; ice suddenly introduced into the stomach will cause intense pain in either supra-orbital nerve; acid in the stomach is apt to cause a similar pain, which may be very quickly relieved by the neutralization of the acid. Phenomena of this kind imply some closeness of connection between the nerves of the sympathizing parts in the centre, probably by means of commissural fibres connecting the respective points of implantation of the nerves with each other.
Med. Gaz., Aug. 10, 1849, *p.* 244.

26.—SOME OF THE CAUSES OF INSANITY.—By Dr. A. J. Sutherland.

[At a meeting of the Royal Medical and Chirurgical Society, Dr. Sutherland, in remarking upon the obscurity of the causes of insanity, observed,]

The disorder might take its rise primarily from the nervous centres, or the different organs of the body. The liver, the uterus, and the stomach, might affect the brain, and insanity might be the consequence. Insanity, therefore, might be said in one sense to be idiopathic; in another sense, symptomatic: but whether the one or the other, it was the seat of the in-

tellect and the affections which was deranged; and therefore we looked with peculiar interest to the cerebrum, to throw some light upon these difficult investigations. With respect to post-mortem examinations, his experience corresponded with the facts recorded by Dr. Webster. He had never found the results of acute inflamation in the brains of lunatics, and what Mr. Solly states with regard to the cortical structure is certainly correct—viz., that there is, for the most part, a state of hyperæmia in acute cases, a state of atrophy in chronic cases; there was also a disposition to venous congestion in some brains,—to active congestion in others; but the effusion into the sub-arachnoid tissue and into the ventricles, spoken of by Dr. Webster, and so frequently found in these cases, was rather the effect than the cause of the disease: in the acute stage it was probably the result of venous congestion, and in the chronic stage it was due to atrophy of the brain; just as the spinal marrow becomes atrophied in tabes dorsalis. But he apprehended there were few who would think that what we saw after death was all that had occurred during the progress of the disease, and therefore the pathologist would be inclined to apply to the symptoms which he had seen during life, and to the analysis of the different fluids of the body, to help him in his investigations. With respect to the former, the symptoms which the intellectual faculties furnished were those of undue activity on the one hand, and of extreme dulness on the other, while the physical symptoms were generally those of irritation; sometimes of congestion, never of acute inflammation. From the analysis of the blood of insane patients, we know that there was no excess of fibrin; while, from the analysis of the urine, we obtained sometimes a plus quantity, sometimes a minus quantity of the phosphates; thus confirming, as far as it went, the evidence which we derived from other sources. With respect to the analysis of nervous matter, L'Héritier had shown that there was a minus quantity of phosphorus in the brains of idiots, and Couerbe asserted that he had found a plus quantity of phosphorus in the brains of maniacs. But not only was it a matter of importance for us to ascertain the quality of the blood, but it was also requisite to estimate the quantity which circulated in the brain. Not only had we examples of insanity from the poison of other diseases from bad blood, but we had examples from local congestion of the brain, and from anæmia. Many patients were admitted into St. Luke's, whose disease had originated in low diet and starvation,—in whose brains might be supposed to have commenced that process of oxidation which Liebig called "eremacausis." But we should also feel inclined to examine into the condition of that subtle fluid, the nervous force, which ministered to those influences by which the mind manifested its ideas, and which, when disordered, counteracted and obscured its development. These were the heads of some of those subjects which he trusted at no distant period might throw light upon the pathology of insanity.

Med. Gaz., May 25, 1849, p. 913.

27.—DIAGNOSIS OF THE DIFFERENT KINDS OF MUSCULAR PARALYSIS.—By Dr. MARSHALL HALL, F.R.S.

The kinds of muscular paralysis, of which I propose to trace the diagnosis, are two—1, the *cerebral*; 2, the *spinal*.

I designate that *cerebral* paralysis, in which, by whatever means or disease, the influence of the *brain* is *severed;* and I designate that form of paralysis *spinal*, in which, from whatever cause, the influence of the *spinal marrow* is *severed*. It is unnecessary to state, that in the latter case the influence of the cerebrum is removed, as well as that of the spinal marrow.

Before I proceed, I must take the opportunity of briefly alluding to the *functions* observed in the muscular system, for it is these that are variously affected in paralysis. The first function of the muscular system which I shall mention is *voluntary motion*, the effect of *volition;* the second function,

or rather affection of the muscular system, is the effect of *emotion;* the third is *reflex action;* the fourth is the *tone* of the muscular system; the fifth is the *irritability* of the muscular fibre. *All* these are wonderfully involved in every muscular act or action, though *one* may be principally so, and the affection of *each* becomes to the physiologist the source of diagnosis in cases of paralysis: for I may take this opportunity of stating, that—

In the diseases of the nervous system, the physiology is the diagnosis.

I will briefly detail the particulars of two cases, which may be taken as *types* of the rest.

The first was a case of hemiplegia, affecting the *right* side. The muscles of the right arm were paralytic, atrophied, and contracted, and rigid. We placed *both* hands in one basin, containing water with a little salt, and a foot in another, and we passed a galvanic current through the limbs so disposed, beginning with the *smallest* force which would produce an obvious movement. Invariably, in many trials, the paralytic arm was moved by the *slighter* force, and the most by a greater force, whatever the direction of the current.

The second case was that of a little girl, aged two years and a half, in whom the left arm had been suddenly affected with complete paralysis nearly two years before, the head having at the time of the seizure been drawn to one side, and the child being under the influence of dentition. In this case the paralysis of muscular power was, as I have stated, complete; the arm was atrophied, the muscles flaccid, the hand moving on the wrist, if held in the dependent position, absolutely uncontrolled by muscular influence. We applied the galvanic *test* as before, using the *mildest* force which would produce an obvious effect. Now, the *unaffected* limb was first and most affected by the galvanism!

In these two cases we have the marked forms of *cerebral* and *spinal* paralysis respectively; in the first, we observe a very marked tone (contraction); in the second abolition of tone, (flaccidity); in the first, we have augmented, in the second, diminished, irritability of the muscular fibre. In the first, too, there was agitation of the arm on any emotion; in the second, none. I had no satisfactory mode of testing the existence or absence of reflex action.

The physiologist, and *now*, I think the practitioner, will see the value of these phenomena to *science*, and in their translation into *diagnosis*.

In hemiplegia, the seat of motion, the source of tone, the source of irritability, are *left;* in spinal paralysis, the seat of emotion, the source of the tone of the muscles, and of the irritability of the muscular fibre, are *removed!* It must be remembered, that *in both cases* the muscular mass was *equally atrophied*. What are the obvious physiological inferences from these facts, and what are their practical advantages in a diagnostic point of view? I leave the replies to these questions to my readers, observing, that the first must, be diametrically opposed to the opinions recently advocated by the late Dr. J. Reid, by Dr. Carpenter, Dr. Todd, &c.

The cases themselves, with many others, have all been witnessed by my friend, Mr. Henry Smith, of Torrington-square, and so frequently, and so carefully, that they may, I believe, be received as accurately ascertained facts, from which equally cautious inferences may be fearlessly drawn. Are not these inferences—first, that the cerebrum is the seat of volition; second, that a lower portion of the encephalon (the medulla oblongata?) is the seat of emotion; third, that the medulla spinalis is the seat or source of tone or tonicity in the muscular system? and fourth, of the irritability of the muscular fibre? and fifth, that the two last are *not* dependent on nutrition merely?

I may here add that the cause of cerebral paralysis is, chiefly, the injured substance of the *cerebrum;* whilst spinal paralysis may arise from the injured substance of the *spinal marrow*, or from the injured substance or function of *spinal nerves*—any disease, in effect, which severs the influence of the spinal marrow from the muscles. In this sense the paralysis arising

from *lead* is spinal paralysis. It is well known that in this disease the tone of the muscles and the irritability of the muscular fibre are diminished. I may observe that the hand and arm contracted by tone in cerebral paralysis are contracted symmetrically, and without *distortion*; *all* the muscles being equally affected: the flexors overcome the extensors, the arm is bent, and the hand closed firmly but regularly. In spasmo-paralysis, *certain* muscles only are excited to contraction, and that contraction is irregular, clonic and tonic, and the arm and hand are affected with various deformities, scarcely admitting of description, but which it would be highly interesting to depict.
Lancet, Aug. 25, 1848, *p* 200.

28.—TREATMENT OF CERTAIN FORMS OF NEURALGIA, PARALYSIS, AND RHEUMATISM, BY THE HEATED IRON.—By Dr. G. E. Day, Physician to the Western Dispensary.

In Retrospect Part XIII, p. 55, the reader will find some very interesting remarks by Dr. Corrigan on this subject. Dr. Day's cases confirm Dr. Corrigan's statements, as to the value of "firing," now called by Dr. Day "the *thermic treatment*." Dr. Day says:]

It consists in the instantaneous and repeated application of a small iron hammer, gently heated, to the skin. The merit of introducing this form of counter irritation is due to the late Sir Anthony Carlisle, who early in the year 1826, published a letter to Sir Gilbert Blane, "On Blisters, Rubefacients, and Escharotics, describing the employment of an instrument adapted to effect those several purposes," and in the November Number of the *Philosophical Magazine* for the same year, addressed a letter to the editor of that Journal on the same subject. This instrument was for some time used in the Westminister Hospital; but the only information I can obtain regarding the success of Sir Anthony Carlisle's treatment in that Institution is, that he failed to cure two cases of hydrophobia, in which he freely applied it along the spine. In 1829, M. Mayor, of Lausanne, published a Memoir, "Sur la cautérisation avec le marteau," in which he shows, that by an instrument of this nature, the effect either of a mustard poultice, or of a blister, or even of the moxa, may be instantly produced. Both Sir Anthony Carlisle and M. Mayor heated their instruments by immersion in boiling water. This method has been adopted by Trousseau, Harvieux, Vanoye, Kneeland, and others.

About three years ago Dr. Corrigan published (in the *Dublin Hospital Gazette*) a series of cases treated in a somewhat similar manner; he, however, makes use of the flame of a spirit-lamp for the purpose of heating his instrument, which, from the description he gives of it, seems more portable and convenient than those previously employed. The instrument I employ is shorter and more portable than that recommended by Corrigan. Placing the end of the forefinger on its curve, I hold the metallic extremity in the flame of a spirit-lamp for about fifteen or twenty seconds. This is a readier mode of heating it than that adopted by Carlisle. By this time, the finger becomes rather uncomfortably warm, and this I regard as indicative of the instrument being sufficiently hot for my purpose. I run it lightly, alternately raising and depressing it, over the place affected. The whole operation is over in a few seconds, the patients scarcely ever complain of the application being painful, and the slight discoloration of the cuticle, which usually follows, altogether disappears in two or three days.

[Dr. Day relates several cases of facial and frontal *neuralgia*, in which the application of the heated iron was followed by the best results. One of these was the case of a man who had resided for some time in India, but had been for the last six years in England. He had been subject for eight months to severe neuralgia, caused by exposure to cold and wet. Dr. Day's report is as follows:]

His countenance is sallow, and bears the signs of acute suffering. He has comparatively little pain during the day, but about half-past six every evening, a darting agonizing pain comes on, which he describes as rendering life insupportable. It extends over the whole of the right side of the face, is very severe in the right temple and proceeds, but with much less severity, towards the top of the head. It seems neither increased nor diminished by pressure over the infra-orbital foramen, or at any other point, although it may sometimes be excited during the day, by simply touching the face, or by a gush of cold air. The mere touch of the bed-clothes would often induce it at night. From prescriptions which he showed me, it appears he has taken iron, quinine, arsenic, colchicum, and iodide of potassium; and beside these medicines he had got into the habit of taking very large doses of opium. A new remedy often gave him relief for a few days, but then seemed utterly inert. The bowels were constipated (probably in part from the opium); the urine was loaded with urate of ammonia; the skin dry and somewhat yellow; the tongue foul; the appetite bad; and on examining the abdomen, I found considerable enlargement of the liver, unaccompanied, however, with any tenderness. I ordered a pretty sharp emetic, to be followed next morning by four ounces of infusion of senna, with half a drachm of sulphate of potash, and a scruple of sulphate of manganese, and restricted him to a milk and farinaceous diet. He promises to diminish his dose of opium by one half.

22d. The tongue was now almost clean; the bowels had been freely acted on, the evacuations being well tinged with bile. The pains had been much the same, but he felt better in himself. I saw him about three hours before the period at which the paroxysm usually came on, and applied the hammer freely over the right cheek and temple. The application did not excite the nervous pain, and gave him no annoyance in any way. I prescribed nothing but a little aperient medicine, to be taken daily.

23d. There was no pain whatever till between nine and ten o'clock last night: that is to say, the access was totally retarded for three hours; and it was then much slighter; more, in fact, like the occasional pains felt during the day. Applied the hammer as before.

I need not follow out all the particulars of this case, as noted down at the time. In the course of a week, the opium was altogether dispensed with. The hammer was applied seven times in all, at intervals of two or three days; and I gave him, on the 30th, a mixture of iron and quinine, taking care only to regulate the bowels.

Dec. 14th. He called to thank me, and to report himself as well as ever he was in his life. I saw him once afterwards, sometime in January. He came to tell me he had got a situation, was going to leave London. There had not been the slightest relapse. I desired him to write to me if there was any return of the pain; but I have not heard from him.

The treatment of this case differs from that in the previous ones, in the fact of the hammer being applied at times when there was comparatively little pain; that is to say, before the paroxysms. I might give several other cases, although less marked than that of Cox, in which the thermic treatment has afforded relief, after numerous other means have altogether failed.

[Dr. Day next gives some cases of *facial paralysis*. The first is that of a London physician in whom symptoms of facial paralysis came on after travelling in a railway carriage with the window open (on the 17th of January.) We are told that]

The ordinary symptoms of facial paralysis regularly set in, and increased in intensity till all power over the muscles of the right side of the face, supplied by the portio dura, was completely lost. The most distressing symptom was the impossibility of moving the right eyelid, a dimness being continually present, which was only removeable for a few seconds at a time, by pressure on the globe. On the 20th, Mr. Dalrymple proposed that Dr.

Watson should be consulted, as, a week or two previously to the attack, there had been severe and prolonged vomiting, intense vertigo, and other symptoms indicative of mischief within the cranium. Taking into consideration these previous symptoms (and, even at this period, there was still considerable vertigo). Dr Watson and Mr Dalrymple prescribed one-twentieth of a grain of bichloride of mercury to be taken with compound tincture of bark three times a-day, and an open blister behind the right ear.

This treatment was steadily persisted in for about ten days, with not the slightest alteration in the state of the face, although with considerable improvement in the general health. Mr. Dalrymple, who had been reading the cases recorded in the Appendix to my treatise "On the Diseases of Advanced Life," suggested that the hammer should be applied, as directed by me. The suggestion was at once adopted, and the hammer applied twice daily. On the first evening (after only two applications) the power of closing the right eye was restored, and, in the course of a week, every trace of paralysis had disappeared.

Mr. W. E., aged 47, had an attack of paralysis of the portio dura of the right side, in March, 1843, after travelling outside a coach, and being exposed to rain the whole day. Various remedies, of which, however, he cannot give a very accurate account, were tried, but electro-magnetism was the first that proved serviceable. Under this remedy the paralysis entirely disappeared in the course of the ensuing summer; but, since that time, any exposure to cold or wet is liable to bring on involuntary twitchings of the muscles originally affected, which usually last five or six days, and then gradually disappear. To use his own expression, "he looks as if he were performing a series of very exaggerated winks." A single application of the hammer immediately arrests these attacks. He now applies it himself, whenever he feels the peculiar stiffness of the cheek which always precedes them.

[We extract the following from a number of cases of *sciatica* and *lumbago*. Dr. Day says:]

I shall now give, as briefly as I can, a few cases of sciatica and lumbago, which are often associated affections. I have notes of a very considerable number of cases in my own practice, and I have been favoured with the particulars of other cases by Drs. Miller, Palmer, and Webster of Cambridge, and Messrs. Richardson, J. C. Langmore, Webster, Aiken, &c. &c.

I have never met with a case of sciatica or lumbago, however severe or chronic, which was not much relieved by the thermic treatment.

Charles Pope, aged 41, a carman, presented himself at the dispensary on the 5th of April, suffering from intense lumbago and sciatica of the right side, extending to the calf. He could not take off his coat, or sit down without assistance, and stated, that even the passage of flatus or fæces from the bowels, caused much pain. Was much exposed to cold and wet about six months ago, and for the last five months he has never been free from pain for forty-eight hours together. During the last three days the pain has been extremely aggravated, entirely preventing sleep. Dr. Adey (whose valuable assistance in testing the importance of this treatment I gladly take the present opportunity of acknowledging) applied the hammer freely over the whole seat of pain. He did not feel any instantaneous relief, but, on the 7th, (two days subsequently,) told us that the pain had very much abated, directly after leaving the dispensary, and that it was now *quite gone from the loins and thigh*, and that the only remaining trace of his ailment was a dull, aching, sensation in the calf. The hammer was applied there.

10th.—No pain worth speaking of in the calf, and none whatever in his loins and thigh since the first application. I again applied the hammer to the calf. He had returned to work the previous morning, and could walk without the slightest inconvenience.

Mary H., aged 27, applied as a morning patient at my house, on the 26th

of June. She had great difficulty in walking into my room; was bent very much forward, and when she finally contrived to seat herself, informed me, —and her statement was obviously true,—that any movement of the body gave her intense pain. She stated that she was quite well till about five months ago when, shortly after her confinement, she caught cold, and had an attack of rheumatic fever, for which she was under the care of a highly respectable surgeon in this neighbourhood. She was confined to her bed for two months. When the acute symptoms had disappeared, she had still very severe pains, especially in her shoulders, loins, hips, and knees, totally incapacitating her from following her household duties, and preventing her even from dressing herself. The gentleman referred to recommended that she should become an in-patient in one of the hospitals, and use vapour baths. She accordingly entered into St. George's, where she remained nearly three weeks, without any relief. She was not allowed vapour-baths, in consequence of her debilitated condition; and she was rapidly losing flesh. It is now about ten days since she returned home in a very desponding state. On examining her chest, I find she is in an advanced state of phthisis. As the pains in the arms, shoulders, and between the scapulæ, were the most severe, I resolved to try to alleviate them first. I carefully observed her while the clothes about the upper part of the chest were being removed, and saw that any motion of upper arm or shoulder gave rise to extreme agony. Even the slight motion required for needlework was unbearable. I applied the hammer very freely, warming it twice, over the shoulders, between the scapulæ, and along the arms. I then desired her to try to raise the arms. She tried very cautiously, and obviously expecting to be, as before, checked by the pain. The arms gradually rose till she clasped her hands together above her head. The poor woman burst into tears at finding the power of her arms thus suddenly and unexpectedly restored to her. When she became a little more composed, I made her try to move them in various directions, which she found no difficulty in doing. She fastened the back of her dress without the slightest assistance, which she had not been able to do since the commencement of her illness; and left me, promising to attend in two days, when I was to apply the hammer to her loins and thighs.

I may, perhaps, be allowed to state that I was so struck with the suddenness and completeness of the relief afforded to the poor suffering woman, that I requested a lady, who happened to call at my house at the time—an old and much respected patient of mine—to see the woman before she left. This lady has kindly permitted me to refer to her, should any of my readers suppose the above account in the slightest degree overdrawn.

June 28th.—This day I applied the hammer very freely and extensively over the loins, down both thighs, and over both knees. Great relief was afforded; she was able to walk with considerable more freedom, and with little pain. She can still move the arms without the slightest pain, but complains of their being somewhat stiff.

July 5th.—She had now a feeling of stiffness and occasional aching (especially at night,) but no pain worth speaking of. I applied the hammer to the points were these sensations were most marked.

I have since seen her three or four times; there has been no return of the pain, but she is sinking fast from the pulmonary affection.

Med. Times, Aug. 11, 1849, *p.* 110.

20.—DIFFERENCE BETWEEN TETANUS AND HYDROPHOBIA.—By Dr. Marshall Hall, F. R. S.

Hydrophobia, like the effects of strychnine, is *hæmatogenic*. The spinal marrow is in a state of abnormal and extreme *excitability* or erethism. But,

as there is no permanent *excitant*, there is no spasm, except under the influence of an occasional one. There is perfect *inter*mission of all spasmodic affection in the intervals between the paroxysms.

Tetanus, on the contrary, is *neurogenic*; and whilst the spinal marrow is equally in a state of undue *excitability*, there is a constant source of excitation in the injured, irritated nerve. There is, therefore, constant spasm, and *re*mission only, in the intervals between the paroxysms—that is, in the absence of occasional excitants,—a paroxysmal exacerbation of spasm taking place when these are in operation.

Such is the grand pathological distinction between these diseases. I may make an additional remark: if in a case of tetanus the injured nerve was divided, the *re*mittence of spasm would become *inter*mittence. This view suggests the real value of amputation in such cases, discussed by Larrey and by Dupuytren, the former recommending, the latter dissuading from, this measure.

I may add, that hydrophobia having its source in the *blood*, its symptoms are uniform; there is always and equally laryngismus, whereas the symptoms of tetanus vary with the special nerve injured, and there is sometimes laryngismus, sometimes pharyngismus, sometimes not, as there is, in different instances, emprosthotonos, episthotonos, pleurosthotonos.

Lancet, Aug. 25, 1849, *p.* 200.

30.—ON HEMICRANIA.—By Dr. A. Turnure.

1. Hemicrania implies moderate compression of a sensory nerve, and particularly of the trifacial.

2. The causes of this compression are some venus reservoirs gorged with blood, and particularly the cavernous sinuses.

3. The treatment ought to consist, 1st, in preventing the compression, which constitutes the prophylaxis of headache. It borrows its means of action from hygiene. 2nd. In palliating its effects by movements and positions of the head, &c., this constitutes the palliative treatment, and its means of action are borrowed from gymnastics. 3d. In removing these effects, this is obtained by the co-operation of gymnastics and of stimulating, depleting, and other medicinal substances.

4. The cause of the accumulation of blood in the venus reservoirs of the base of the cranium ought by no means to be neglected.

Lancet, Aug. 18, 1849, *p.* 179.

31.—CASE OF TUBERCULOUS TUMOURS IN THE BRAIN AND SPINAL CORD.—By — Shaw, Esq.

[The symptoms in this case, that of a woman who was a patient in the Middlesex Hospital, were at first pains in the back and legs, followed by tingling and pricking, and then by complete paraplegia. She also complained of pain in the lumbar vertebræ.]

On the post-mortem examination no morbid appearance presented itself till the theca vertebralis was slit open. The membranes were then seen to be quite healthy; but at two points, the upper one opposite to the eighth, and the lower to the twelfth, dorsal vertebra, the spinal marrow was slightly swollen into a globular form, and felt hard; the surface, in colour, texture, and vascularity, remaining unchanged. On making a longitudinal section of the upper swelling, an oval mass of tubercular matter, three quarters of an inch in length, and about the same diameter as the spinal marrow, of the firmness of a lymphatic gland, of uniform structure, and of a pale green hue, was seen to occupy the whole interior of the organ, and was invested all round by a thin layer of medullary matter. The structure of the spinal

marrow immediately adjoining the morbid growth appeared sound. The swelling a few inches lower down was found to be caused by a similar circumscribed mass of tubercular matter, contained in the interior of the cord, but it was somewhat smaller in size. In the left crus cerebelli, close to the pons varolii, and about its middle, another tubercular tumour, in colour and size not unlike the kernel of a hazel nut, was found imbedded in the substance of the crus, at the depth of about a quarter of an inch from the surface, the adjacent medullary matter being quite healthy. There was also a tumour of the same structure, and of the size of a pea, in the left hippocampus minor. Tubercles were scattered through both lungs; and in the upper lobes some seemed to be breaking down.

Med. Gaz. June 1, 1849, *p.* 950.

22.—NEUROMA, OR TUMOURS OF NERVES.—By Dr. R. W. Smith, F.R.C.S.I., Lecturer on Surgery at the Richmond Hospital School, Dublin.

[From a review of Dr. Smith's folio monograph on this subject, contained in the British and Foreign Medico-Chirurgical Review, we extract the following observations:]

Tumours implicated and connected with nerves have long been recognised by pathologists; and, according to one opinion, were referred to by Hippocrates and Galen under the name of ganglions. This, however, is probably incorrect; and, at all events, it was not until the publication of M. Odier's 'Manual de Méd. Pratique,' in 1803, that they received the name, by which they are now known, of neuroma. They may be divided into idiopathic and traumatic: those which are spontaneous, and for whose appearance no external origin can be assigned: and those which follow injuries to nerves, as wounds made in amputation.

Neuromatous tumours are generally ovoidal, and have their long axis corresponding with the direction of the nerve upon which they are seated; they may often be moved from side to side without much inconvenience. Extreme suffering is occasioned when this is attempted in the longitudinal direction. They never contract adhesions to the integuments, unless from continued pressure, nor is the skin over them discoloured; and they are scarcely ever spontaneously cured. They are subject to great variety both in size and number—occasionally no larger than a grain of mustard-seed, they have been met with of the dimensions of a large melon. Frequently single, affecting one nerve only, they are at times to be counted by the hundred, and affect all parts of the nervous system alike.

The solitary neuroma is nearly always the source of acute agony to the patient, and is most often of the traumatic variety. When kept at rest, a tingling or numbing sensation may alone indicate its presence; but, influenced by changes in the state of the atmosphere, disorders of digestion, and so forth, it is liable to exacerbation of pain terrible to witness, as severe as the acutest neuralgia, and comparable only to an electric shock darting through the trunk and branches of the affected nerve. It has been noticed that in dry weather the pain sometimes ceases altogether. Idiopathic neuroma is generally met with as a single painful tumour; yet, occasionally, these growths are numerous on the same nerve, and in such instances are often free from pain. They are relatively much less frequent in the nerves of the ganglionic than in those of the spinal system. Both kinds of neuroma may be solid throughout, or may contain a cyst filled with fluid; and it has been remarked of both of them, that when the trunk of the affected nerve is compressed above the tumour, the pain occasionally ceases entirely.

There is no ground for the assertion of Bayle, Cayol, and others, that neuromatous tumours are of a scirrhous or malignant character. They never involve neighboring parts, nor affect the lymphatic glands; and do not return when once removed. It is necessary, however, carefully to dis-

tinguish those cases in which malignant diseases implicate nerves, and which are not examples of neuroma at all. Of the causes of this disease we know little; mechanical irritation of a nerve by the presence of a foreign body, pressure, blows, the division or wounding of nerves by cutting instruments, and such like injuries, may be assigned as influencing the production of traumatic neuromas; but concerning the origin of the idiopathic variety we are wholly ignorant. It seems to us better to confess this at once, than to gloss over our want of knowledge by such terms as inflammation of the rheumatic diathesis. Dr. Smith has adopted as his motto a statement of Cruveilhier's, which will probably long remain true—"*L'anatomie pathologique des nerfs est encore a faire.*"

However great may be the diversity in the causes of neuromatous growths, their anatomical characters are remarkably uniform. It has been before stated that they are either solid or cystiform: it remains to consider each of these varieties, and for this purpose we transcribe entire Dr. Smith's description of them:

"The solid idiopathic neuroma originates either in the cellular structure which connects the neurilemma or external sheath to the trunk of the nerve, or within the smaller sheaths, by which each of the fibres, the aggregate of which constitutes the nervous trunk, is enveloped. In these two cases the disposition of the nervous fibres upon the surface of the tumour, as also the coverings of the latter, are somewhat different. In the former, when the tumour originates in the neurilemma or its connecting cellular structure, we usually find that the nervous fibres, although flattened and increased in breadth, are not separated from one another as widely as in the latter, supposing the tumour to be of the same size in each case; they are more confined to one surface of the tumour, generally its deep aspect; but when the neuroma originates in one of the central sheaths, it presses, as it grows, more equally upon the surrounding fibres which are, in such cases, found more widely dispersed over the surface of the morbid growth; Again, in the latter case, the tumour, when large, is generally invested by a greater number of coverings than in the former; its immediate capsule *is* the sheath of the fibre where it has originated; external to this we find a thin investment, formed by the condensation of the cellular tissue, which constitutes the general sheath to the trunk of the nerve; this sheath or external neurilemma forms the most superficial covering, with the exception, of course, of the subcutaneous cellular texture. In some cases, the coverings of the tumour may easily be separated from one another, and with very little dissection can easily be shown to be distinct membranes; but in others they are intimately united, forming a dense capsule of considerable thickness. The degree of adhesion of the tumour to its immediate investing membrane also varies considerably in different instances, the connexion being sometimes so close, that it is impossible to remove the tumour from the sac without the aid of the scalpel; while in other instances, when the sac is opened, the tumour can without difficulty be detached by the finger from all its connexions.

"I have never seen the capsule undergo any cartilaginous or osseous transformation; it is smooth and shining externally, and its internal surface presents in general a glistening aspect, more especially when it is but loosely connected to the tumour. The oval or oblong form, which so large a proportion of neuromatous tumours acquire as they increase in size, is to be ascribed to the circumstance of their being covered by the neurilemma, which admits more readily of their growth in the direction of the trunk of the nerve. A section of a neuroma usually discloses an exceedingly dense homogeneous texture; the surface is smooth, of a grayish-white colour, and frequently the elasticity of its structure is such that the cut surface becomes convex; it seldom presents the same shade of colour as the nervous tissue; its texture is essentially fibrous, or fibro-cellular, but so exceedingly close and dense, that the unassisted eye can scarcely even detect the course or

arrangement of the fibres. In the majority of cases, the tumour is solid throughout, and everywhere presents the same appearance, and an equal degree of density; indeed the uniformity of the aspect of the interior of neuromatous tumours is not one of their least remarkable features.

"It has been stated by Dupuytren that one of the characters which distinguish neuroma from the fibro-cellular encysted tumour (or painful subcutaneous tubercle of English authors) is, that in the former there is a cavity containing fluid, the latter being always solid throughout. This I believe to be by far too general an assertion, and my experience would lead me to say that it is only in exceedingly large tumours that cavities are occasionally found; as neuroma may even attain the size of an infant's head, without any cavity being formed in it. The existence of a cavity containing fluid in the smaller neuromatous tumours, I believe to be the exception. When, however, the tumour has attained a very large size, cavities occasionally form in its interior, they vary considerably in their dimensions, do not communicate with one another, and are lined by a distinct shining membrane, which, sometimes villous, is generally smooth. Some contain a serous fluid; in others the contents resemble rather synovia or albumen, or may present the characters of purulent matter; others, again, are filled with fibrin; and finally, some are empty.

"The lining membrane generally pale, is sometimes very vascular; but I have never seen, in any of the cavities of neuromatous tumours, fluid or coagulated blood, lardaceous or medullary matter, or any of the substances which are found in malignant tumours; nor have I ever known the neuroma itself, no matter how long it may have existed, or to whatever size it may have attained, assume the external character or acquire the internal structure of cancerous or encephaloid growths. The trunk of the nerve, immediately above and below the tumour, is normal in appearance, and the intermediate portion is merely altered in form, and thrown out of its usual course; it either passes as a simple trunk along the posterior or lateral surface of the tumour, or else its separated fibres are dispersed over the surface of the neuroma. In a few instances I have seen some of the nervous filaments enter the superior extremity of the tumour, although I am unable to trace them through it; but I have not yet met with any example of the passage of the entire trunk of the nerve through the neuroma, as is stated to happen occasionally: 'Mox nervus cum toto trunco suo in uno latere tumorem intrat, altero autem ex eo rursum egreditur, mox complures rami et intrant et exeunt.' (Knoblauch.) When the neuroma is of a large size, it is exceedingly difficult to trace all the separated fibrillæ joining again into a trunk below the tumour, and in some instances it is quite impossible to follow them with the scalpel; but if the tumour and the portion of the nerve connected with it be left some time in nitric acid, it will become manifest that there is no interruption of continuity in the fibrillæ. It should, however, be mentioned that in the first case recorded by Aronssohn, the author states that the continuity of the nervous fibres was destroyed; perhaps if the preparation had been macerated in nitric acid, it would have been found that this opinion had been hastily formed."

The diagnosis of neuroma is generally sufficiently easy: "The extraordinary sensibility of the tumour, the peculiar electric character of the pain, its terrible severity, paroxysmal type, and extension along the trunk and branches of the nerve," are symptoms alone sufficiently characteristic of the disease.

With respect to the treatment, it may be observed that every measure, short of excising the disease, has been wholly unsuccessful. This may be accomplished in three ways: in the first, the tumour is cut away, together with the piece of nerve to which it is attached; in the second, the tumour is dissected out the mass of nerve-fibres amongst which it has grown; and there still remains the severe measure of amputation, when the disease is situated in either of the extremities. The first named operation, that of removing a portion of the nerve, together with the morbid growth, is in

general a safe and practicable proceeding. No fear of any evil result need be entertained; for there is ample evidence to prove that several inches of large nerves may be removed without danger; and frequently both sensation and the power of voluntary motion return after the lapse of a few months, a sensation of remarkable coldness only remaining in all the parts supplied by the affected nerve. Reich removed four inches of the ulnar nerve; a slight degree of insensibility in the little finger being the only permanent effect of the operation. A similar favorable result has followed the removal of portions of the median and tibial nerves. Malagodi cut away a portion of the sciatic nerve in a case of neuralgia, and at the end of a year the functions of the limb were perfectly restored.

Indeed the restoration of the functions of a divided nerve is a fact painfully evident in cases where the division has been performed for the cure of neuralgia; and to the veterinary surgeons who frequently practice neurotomy, it is often a source of great annoyance.

Neuroma succeeding to amputation.—There is good ground for the opinion that a bulbous enlargement is the normal condition of the extremities of nerves divided in amputation. In some instances this enlargement is general, commencing gradually, and ceasing as gradually; in others it presents the form of a distinct tumour, whose magnitude is determined by that of the nerve upon which it is seated. The general condition of the nerve-filament in these cases, is that of becoming incorporated and finally lost in the substance of the growth; but sometimes the nervous termination is sudden, and in others, filaments pass through and are traceable the whole length of the tumour. Such growths are destitute of vascularity, inclosed in a distinct capsule, and, in by far the greater number of cases, productive of no uneasiness whatever.

This condition of the ends of nerves, evidently designed to protect them from receiving injury by pressure and similar mechanical causes of irritation to which they are exposed, is sometimes the occasion of neuralgic suffering of the most severe character, of which no satisfactory explanation, in the present state of our knowledge, can be offered. Dr. Smith says:

"The adhesion of the end of the nerve to the cicatrix of the stump; its irritation by osseous spiculæ springing from the extremity of the sawn bone; the including of a nervous filament in a ligature; the occurrence of a conical stump; such are a few among the many circumstances which have been stated as the occasional causes of these terribly painful tumors."

British and Foreign Medico-Chirurgical Review, Oct. 1849, *p.* 397.

33.—CASE OF TRAUMATIC TETANUS CURED BY THE DESTRUCTION OF THE CICATRIX BY A RED-HOT IRON

A robust youth, aged twenty-two years, was seized with trismus on the ninth day after the receipt of a wound on the temple, when it had almost healed. He experienced a painful constriction of the chest, followed by reiterated convulsions and opisthotonos. Suppression of urine, delirium, dysphagia, and unconsciousness followed.

All other means having failed to abate the severity of the disease, M. Remy, on the seventh day of the attack, determined to have recourse to the mode of treatment advised by Larrey, viz. cauterising the cicatrix in its whole extent with an iron heated to a white heat. The symptoms immediately underwent a great improvement: the convulsive movements became less frequent, and soon ceased entirely; consciousness returned, and the urinary excretion reappeared; but the muscular rigidity continued, the slightest movement or attempt at the deglutition of fluids produced a sense of suffocation; the recumbent posture had become impossible, and the patient exclaimed against a breath of air. This condition, which lasted from four to five days, disappeared under the use of digitalis in large doses. In fifteen days more convalescence was complete.

Med. Gaz., Sept. 28, 1849, *p.* 555.

ORGANS OF CIRCULATION.

34.—EFFECTS OF BLOODLETTING AND MERCURY IN PERICARDITIS.—By Dr. John Taylor, Physician to the Huddersfield Infirmary.

[In analyzing the forty cases of pericarditis published by Dr. Taylor a few years ago, he divides them into two classes, first, those occurring in connexion with *acute rheumatism*, the patient being previously in *good health*; and, secondly those occurring in connexion with *renal disease*, or in persons older than those of the first class, and previously in a *bad state of health*. All those in the second class died, but very few of the first class; and hence Dr. Taylor concludes that the age and previous health of the patients, and the nature of the complicating diseases, have more influence in determining the issue of pericarditis, than any differences in the treatment. We are told that]

The remedies whose effects are examined are chiefly bloodletting and mercury.

1. *Bloodletting*.—The conclusions arrived at are the following:

1. The duration of pericarditis increases in proportion as the time is longer between the commencement of the disease and the first bleeding. 2. The duration of the cases bled after the first four days is greater by one-half than of those bled within the first four days from the invasion of the disease. 3. The influence of bleeding was more marked in the case in which it was copiously and repeatedly, as well as early, practised, than in those in which blood was drawn less frequently and more sparingly. 4. Pericarditis is never extinguished at once by bleeding, however early or however copiously practised. 5. In several cases the pericarditis was suspended for a limited time. The suspension in every instance was immediately consequent upon the local abstraction of blood. 6. It is probable that renal has a longer duration than rheumatic pericarditis. 7. Bloodletting must be less copious, and is more frequently inadmissible, in renal, than in rheumatic pericarditis. 8. Bloodletting probably lessens the mortality, inasmuch as it lessens the duration of pericarditis; but direct proof of the reduction of mortality is not to be obtained from these cases. 9. The abstraction of blood by venesection, cupping, or leeches, almost invariably relieved the pain at once, but not permanently. There is no reason to believe that any one form of bleeding relieved pain more effectually than another. 10. Bloodletting never lessened the frequency of the pulse, except when there were signs of the inflammation having abated. 11. The tendency to syncope in some cases of pericarditis, renders it necessary to be very careful in abstracting blood by venesection. 12. Free venesection for pericarditis does not always prevent the subsequent appearance of serious inflammation in other internal organs.

II. Mercury.

1. The cases in which mercury was given within the first four days, had an average duration less by five days than those in which it was given later. 2. The cases in which salivation was produced within the first four days had an average duration less by two days than those in which it had occurred later. 3. It is difficult to determine how much of the benefit was due to the mercury, because all the patients who took mercury were likewise bled, and in almost every instance the two remedies were first employed on the same day. 4. The author is inclined to the conclusion, that the benefit was due in greater measure to the bleeding than to the mercury—partly because the duration of the disease was more abbreviated in those who simply began to take mercury than in those in whom salivation was produced within the first four days. The administration of mercury coincided with the bleeding, but the salivation did not, and the results are just what might be looked for upon the supposition that the benefit was due to

the bleeding, and not to the mercury. 5. If the production of salivation had anything like the marked influence in arresting inflammation, and in promoting the removal of its products, which it is currently believed to possess, the duration of the cases of pericarditis after salivation ought to have been much less than it really was. This is proved by a detail of the cases. (*a.*) Salivation was not followed by any speedy abatement of pericarditis in sixteen cases. (*b.*) Salivation was followed by pericarditis in five cases. (*c.*) Salivation was followed by an increase in the extent and intensity of the pericarditis in three cases. (*d*) Friction-sound ceased two days before the mouth became sore in two cases. (*e.*) Salivation was followed by a speedy diminution of the friction-sound in two cases; it did not cease, however, for some days after. (*f.*) The pericarditis ceased soon after salivation in two cases; in one of them, however, it had been declining for some days before. (*g.*) Mercury was given, but no salivation was produced in seven cases. (*h*) No mercury was given, nor other treatment adopted in eight cases. (*i.*) Cases are detailed exhibiting the occurrence of various internal inflammations during the time that salivation was proceeding. The cases comprise examples of endocarditis, pleuro-pneumonia, pneumonia, pleuritis, erysipelas, and rheumatism.

A conclusion rather adverse to the antiphlogistic powers of mercury having been drawn from the facts narrated, the author next examines the evidence upon which the contrary and more prevalent opinions is based, and infers that the evidence is not satisfactory. *Med. Gaz., July 20, 1849, p. 125.*

26.—ACCIDENTAL ADMISSION OF AIR INTO VEINS. By Bransby B. Cooper Esq., F.R.S.

[Respecting the proximate cause of death after the occurrence of this accident, Mr. Cooper observes:]

It appears to me that death may take place in consequence of excessive distension of the right auricle when air is forcibly injected into a vein, or when, in a surgical operation, owing to a combination of circumstances, a large quantity of air suddenly gains admission to the heart; the right auricle would then be incapable of contracting upon the air, perhaps from that fluid not furnishing the natural stimulus to the muscular fibres of the heart; immediate death would then be inevitable, as the action of the heart itself would be suddenly and completely arrested. In such a case death would be instantaneous; but when the quantity of air admitted into the vein is less, it becomes mixed with the blood, and then the circulation is only more or less impeded—clogged, as it were, with the presence of the foreign matter. As death does not here supervene with such great rapidity, time is obtained for the employment of the remedial treatment; in some cases, as I have already shown, this may be sufficient to restore the patient—in others the period of dissolution is only postponed. The supposition that when air enters a vein death is caused by the poisonous influence of carbonic acid generated within the venous canal by the reaction of the oxygen of the air upon the carbon of the blood, is, I think, unsupported by any evidence that can be drawn from the phenomena symptomatic of such an accident; I believe, indeed, that where the quantity of air mixed with the blood is not sufficient entirely to prevent the contraction of the auricle, but passes into the circulation, and the blood is propelled in a frothy state through the pulmonary artery to the capillaries of the lungs, the admixture of air with the blood seems to present a physical impediment to the passage of the blood into the capillaries—the function of respiration is interrupted, and death ensues in consequence of the blood not undergoing those changes necessary to the restoration of its vital properties. It has been proved that the presence of air in a fluid materially impedes its circulation through ca-

pillary tubes; and some experiments on this subject are detailed in an interesting paper upon the "Admission of Air into Veins," read by Mr. Erichsen at the thirteenth meeting of the Bristol Association.

If, unfortunately, air should gain admission to a vein in a surgical operation, or from any other cause, the first thing to be done is to compress the wounded vein, to place the patient in the recumbent position, dash cold water in his face, support respiration by artificial means, and to apply warmth and stimuli—such as sinapisms, &c.—to the surface of the body, hold ammonia to the nose, and give it internally mixed with wine, if the patient be capable of swallowing. If the quantity of air admitted to the heart be sufficient to maintain the distension of the right auricle, I believe death to be instantaneous. If the quantity be not so great, the heart may still be capable of propelling it through the pulmonic capillaries: the effect would then be less rapid, but still would doubtless prove fatal. If the quantity of air admitted be still less, the vital power may be sustained until the capillaries had sent the blood through the lungs to the left side of the heart, under which circumstances the patient may recover.

Med. Gaz. Aug. 17, 1849, p. 267.

36.—TREATMENT OF PHLEBITIS.—By Bransby B. Cooper, Esq., F.R.S.

With respect to the treatment of phlebitis there is considerable difficulty; for, notwithstanding the high degree of local action by which it is characterized, the constitutional symptoms so rapidly put on the typhoid character that depletion of any kind can only be employed with the utmost caution; promoting the secretions, therefore, and at the same time allaying irritation, is all that can be safely pursued. Calomel, antimony, and opium combined, seems to be the best remedy, particularly when assisted by a mixture of liq. ammon. acetatis, tinct. of hyosey. and camphor mixture. The affected limb should be kept elevated, to facilitate the return of blood to the heart,—poultices and fomentations should be applied over the whole limb, and punctures made through the skin wherever it has become tense from effusion. As soon as the local irritation has been subdued by these means, bark and mineral acids, nutritious food, and porter may be employed, and may be safely continund so long as the natural secretions are duly performed. M. Blandin has recommended the early application of leeches between the original point of inflammation and the first set of absorbent glands, with the view of preventing the formation of pus: I should, however, fear that the application of leeches would be dangerous both from their depressing influence, and from their increasing the local tendency to inflammation; and if there be any analogy between phlebitis and erysipelas, the danger must be rendered still greater, and no surgeon would venture to apply leeches where there existed the least tendency to the erysipelatous inflammation.

Earthy deposits are not very frequent in the veins: they occur, however, sometimes, and are called phlebolites: they have been found in the vena cava and saphena major veins: they are sometimes loose, and Mr. Langstaff met with three calculi loose in the veins of the uterus Morbid growths are occasionally discovered in the interior of the veins. they occur most frequently, I believe, when malignant disease exists in close proximity to a vein.

Med. Gaz., *Aug.* 3, 1849, *p.* 179.

37.—VOMITING, REGARDED AS ANTAGONISTIC TO SYNCOPE.—By J. G. French, Esq., Surgeon to St. James' Infirmary.

Any cause capable of so lowering the force of the circulation as to determine syncope can also produce vomiting. If a strong man lose blood to

such an extent as to induce syncope, he will in all probability have a seizure of vomiting. Should this occur during incipient fainting, he will not swoon; if he have completely swooned, we may calculate on reaction on the occurrence of evomition. Thus, then, from so direct a source of enfeebled circulation as the sudden abstraction of blood from a healthy man whose stomach or system contains nothing deleterious, we may confidently rely upon the production of vomiting. The phenomenon of sea-sickness, in my opinion, consists chiefly of a series of attacks of syncope, followed by a series of reactions. The fact that fainting is produced by a swinging motion on the generality of individuals, is undoubted, and the relief afforded to that condition by the full and active effects of retching, is also equally certain; but as the agitation of the ship continues, these phenomena continue to hold their alternate course until either the rocking of the vessel is discontinued, or the system ceases to be affected by it.

It is highly probable that the action of many of the class of emetics, and also of some poisons, owe their emetic effects simply to their influence in depressiug the heart's action, and not to any direct effect upon the stomach itself. So, if any severe shock has been sustained by mechanical injury, when vomiting occurs it is to be regarded as evidence of reaction from a state of more or less syncope which has resulted from it. If we study the physiognomy of a person in a state of syncope, and also during evomition, we find that the two conditions are exactly opposite: in fainting the countenance is completely blanched; while in evomition the capillaries are intensely injected, even to those of the conjunctivæ.

Whatever may be the powerful effects of medicines in curing insidious diseases, in syncope they are peculiarly inert compared with the immediate influence of measures suggested by the physical laws. Thus the horizontal posture is by far more restorative than any of the articles of the materia medica. In examining the mechanism of energetic vomiting, we have only to regard the powerful contractions of the diaphragm and abdominal muscles, in order to understand its effect on the circulation; direct pressure on elastic tubes containing a viscid fluid being obviously the most immediate way of emptying them. Nor should it be forgotten that the blood varies in its degree of fluidity in proportion to the force of the circulation; thus rendering mechanical action the more important.

I am unwilling to leave the subject without adding a few words on its application to cholera. In the state of collapse, with the heart scarcely acting at all, and the blood in a peculiarly viscid condition, what measures can be so restorative of the circulation as the action of vomiting? It is a fact connected with the history of the disease, that when this symptom is most remarkable, the disease is least fatal.

It is not to be alleged against the medical profession, that deficiency of zeal or inactivity is one of the causes to which the want of success in the treatment of this disease is to be ascribed, and therefore if it be established that the act of vomiting is desirable in cholera, it becomes important to weigh well how far this doctrine is to influence the remedial art. If vomiting after shock produce reaction—if it relieve the syncopal condition of sea-sickness—if it be observed quickly to restore the circulation in the subject of herrmorhage, surely these are circumstances in which the use of emetics would never for a moment be proposed It has been already suggested that the very action of many of the substances which produce this effect do so only by lowering the force of the circulation: thus exciting vomiting as the act of the so-called *vis medicatrix naturæ*. The use of emetics, then, in the treatment of cholera, is not to be regarded as desirable, for this reason: all reparative processes pre-suppose vital power to establish them. If, therefore, there be no vomiting, it is a proof of want of vital power to resist the influence of the disease—just as in a fatal syncope there may be no emesis—and that such an action may be there even unattainable. I would observe that whatever view be taken of the nature of the dis-

case, and whatever cause be assigned for the state of collapse, the treatment of that state on just physiological principles demands redilution of the blood with cold water, and that the cramps and vomiting should be regarded as directly tending to restore the circulation.

Med. Gaz. Aug. 17, 1849, p. 278.

ORGANS OF RESPIRATION.

38.—PHYSICAL DIAGNOSIS OF PHTHISIS.—By Dr. R. P. Cotton, Assistant Physician to the Hospital for Consumption.

[The physical signs of tubercular disease in the lungs, vary with the period of the disease, accordingly as the stage is that of crude tubercle, of softening, or of elimination. Speaking of the signs of the first stage, Dr. Cotton first mentions the supra- or infra-clavicular *depression* which is not unfrequently observed at an early period. Any such depression on one side is to be regarded, he says, with suspicion, but the sign does not invariably occur at this period of the disease. Dr. C. then observes:]

Unless the tubercular deposit be considerable, or the neighbouring part of the lung much condensed, *application of the hand* will not detect any morbid amount of vocal fremitus in the infra-clavicular region; and as an excess on the right side is natural, its employment is nearly limited to the examination of the left, where, if the vibration be greater than on the other, phthisis may be fairly suspected.

[At this early period, careful *percussion* will generally detect a difference in the resonance of the affected part, which becomes progressively duller as the disease advances. As to the mode of performing percussion, Dr. Cotton remarks:]

The best method is to tap upon the centre of the middle finger of the left hand pressed steadily upon the intercostal spaces, parallel to the ribs, with the extremities of the united fore and middle-fingers of the right hand—the movement being made solely by the wrist-joint, and the elbow kept perfectly motionless. In doubtful cases it is useful to percuss whilst the patient is holding breath after a deep inspiration, during which the affected lung being less distended than the other, may exhibit more or less comparative dullness. Diminished resonance is one of the earliest and most characteristic signs of phthisis, and I have met with but two cases in which it was calculated to mislead. These were patients labouring under sub-acute bronchitis, in each of whom one infra-clavicular region was decidedly dull, as I believe, simply from an accumulation of mucus. In these instances, however, this character changed even at each visit; and such examples are so rare as scarcely to detract from the value of percussion.

[It is *auscultation*, however, which gives us the most decided evidence of disease. The following are Dr. Cotton's observations on this means of diagnosis:]

The changes in respiration caused by tubercle are various, and depend upon its extent and position, as well as on the physical state of the surrounding lung; but they may be all included under the following heads:—viz., weak, jerking, harsh, bronchial, expiration prolonged;—which will be spoken of separately.

Simple weakness, without any other alteration, is very often met with, and may be found over the whole apex, or only in spots: in the latter case, the intensity of breathing in the immediate neighbourhood is generally increased to compensate for the deficiency; and, in the former, the other lung frequently presents the respiration termed compensative or supplementary—which is merely a highly developed natural type, to make up for loss of energy on the other side. In some cases the weakness passes almost into the absence of respiratory murmur; but I have never yet met with a case

of its total suppression—that is to say, in which a sound more or less loud could not be heard during forced breathing. Where feebleness of respiration depends upon tubercle, it is singular to observe how progressively the sound increases in descending, until, towards the middle of the lung, it becomes similar to the other side. Weakness may be a healthy peculiarity, but as such, it is found precisely alike in all parts of the chest; therefore, unless this character is determined comparatively, no dependence can be placed upon it. When the breathing is naturally weak, slight changes are not easy of detection; but if by percussion and other general signs, suspicion be excited, it is useful to listen whilst the patient takes some deep inspirations, when a very manifest difference is often discovered. It is so difficult to make many persons understand how to breathe forcibly, that care must be taken that the same amount of effort be made whilst each side is examined; but by practice it is easy to tell from the movement of the stethescope, whether the breathing is performed evenly.

Where, in suspicious cases, the respiration is equally feeble at both apices —the result of an equal amount of tubercle in both lungs (an unusual occurrence,) I have formed a correct diagnosis from ascertaining that at the basis it was comparatively strong; recollecting the rule previously mentioned, of there being in health a somewhat greater intensity in the former than in the latter.

In jerking respiration, the inspiration, but little changed in intensity, instead of being uniformly developed, occurs in irregular puffs; whilst the expiration is scarcely affected. This is a very distinctive and common sign, and early in its appearance, often remaining for weeks or months, and generally followed by the harsh variety,—or, if the disease does not advance, gradually subsiding, or passing into the weak type. It is not difficult to understand the cause of weak and jerking respiration: an impediment exists to the free expansion of the lung, which in the former is partially and gradually overcome, but in the latter only by intermitting efforts.

Harshness may be a quality added to either of the above, or occur as an independent variety; in the former case, no particular explanation is required, but in the latter, a frequent and important condition obtains. Harsh respiration is known by being louder than that of health, and conveying to the ear a distinct idea of air passing over a rough surface; it is either limited in position, or diffused over the whole infra-clavicular region—the latter generally happening with the progress of tuberculization, and is at length superseded by the bronchical form. The harsh quality exists in every degree, from the simple loss of the smoothness peculiar to health, to its passage into indistinct and small crackling sounds; as it would seem the commencement of rhonchi, characteristic of phthisis, which will be explained hereafter. Its intensity is variable, sometimes amounting to a sound positively blowing, at other times scarcely above the healthy standard; when once established, is is but too apt to increase, whilst the general symptoms betray a corresponding advance in disease: by proper treatment, however, it may often be arrested and lessened, although, when once fully established, I have never known it entirely lose its characteristic quality.

Alteration in the relative lengths of the two respiratory murmurs is generally owing to an increase in the expiration; but sometimes the inspiration is shortened, which gives to the other an appearance of prolongation. Whether the expiration be lengthened actually or relatively, it is equally a sign of disease; but a decrease is of no importance, since it may vary in duration from the usual standard, until it is quite inaudible. Prolongation of the expiratory murmur may exist separately, or be associated with the weak and harsh varieties; it is rarely much increased in length without being changed in intensity or quality; sometimes it is louder than in health, at others harsh, or bronchial. If one or more of such changes be limited to the ordinary seat of tubercle, they become valuable evidence of phthisis, and with the concurrence of other general and physical signs, leave no

doubt as to the disease. The cause of prolonged expiration may be explained, either by the mechanical obstacle to the exit of air afforded by the tubercular matter, or the diminished contractility of the pulmonary tissue; it is probable that both may act in combination; the inspiration may be at the same time shortened, by the decreased capacity and imperfect expansion of the lung. Bronchial respiration commences either from an almost imperceptible transition of the harsh variety, or a gradual extension of the bronchial quality of expiration into both murmurs; even in the former case the first change is often observed in the expiratory sound, and it may be a long period before the other becomes affected; but this is not an invariable rule, for occasionally the inspiration alone is bronchial and remains so throughout. The respiration is naturally bronchial in some parts of the chest, but elsewhere it can only become so from the conduction of sound from more or less deeply seated bronchi, by solidity of the lung. M. Fournet, a great authority in auscultation, has taken pains in explaining the distinction between the healthy and morbid kinds, but from the varying character of both, I have failed to discover the practical utility of his conclusions; when, however, the latter has been long established, it is easily recognised by its greater harshness, dryness, loudness, and tubular character. On this subject the following rules may be found useful:—

Bronchial respiration, however slight, where it does not occur naturally, is a sign of disease; if in, or near, those parts where it may do so, its value consists in the presence or otherwise of a corresponding condition on the opposite side, since the natural kind is never found on one side only, and the morbid rarely on both, or if so, not in the same degree. Whenever the respiration is bronchial over the ordinary seat of tubercle, it may be taken as presumptive evidence of phthisis; but it is far from being a constant attendant upon the first stage, as a considerable amount of pulmonary condensation is necessary to its production; when fully established it is generally permanent, until superseded by symptoms of breaking up of the lung; although by proper treatment, its progress may be often stayed, and the amount considerably lessened. It is important to recollect that these changes in the respiration are not, *per se*, a proof of phthisis, since they indicate merely disordered function of the lung, and are common to any alteration in its physical state, impeding the free entrance and exit of air. The lung may be thus influenced either by turbercles alone, from their number,—inflammatory consolidation, from their irritation,—idiopathic inflammation,—or mechanical obstacles in the air-passages.

Two circumstances will generally determine their dependence or not upon tubercular disease—viz. (1) position; (2) co-existence of other signs.

1. *Position.*—It is well known that tubercles, as a general rule, are first deposited in the superior lobes; in very rapid and acute cases, they may be distributed equally throughout the lung, but in chronic cases, the bases are seldom implicated, and then not until the disease is in an advanced stage: in 500 out-patients I have met with but four cases where the lower parts seemed chiefly affected, and only one instance of a tubercular cavity in the inferior lobe. They appear at first equally disposed either to occupy but one side, or to occur in one to a much greater amount than the other: in 100 cases in the first stage, they were found, on the right side only, 27 times; on the left only, 51 times; and on both sides, 22 times.

Situation of Tubercle in 100 *Cases of Early Phthisis.*

Right Apex.	Left Apex.	Both Apices.	
		Equally.	Unequally.
27	51	8	14

If, therefore, the morbid respiration show a corresponding limitation, it is a valuable sign of phthisis: if, on the other hand, it occur in other situa-

tions it is probably produced by other diseases, of which the following is a brief sketch.

The respiration is weak over the greater part of the chest whenever an obstacle exists to the free entrance of air into the pulmonary cells: it is harsh when the surface of the latter has lost it smoothness: hence, the first is met with in bronchitis and emphysema—in many nervous affections—whenever the calibre of the bronchi is changed by spasm, as in asthma, or the pressure of tumours; whilst the latter accompanies bronchitis, and emphysema, (from attendant bronchitis).

Expiration may be prolonged in any region by a mechanical impediment to the exit of air, and by diminished elasticity of the lung itself; hence it is common in bronchitis from accumulated mucus, and in emphysema from permanent dilatation of the air cells. Jerking respiration may attend incipient pleurisy, and pleurodynia, when it is limited to the seat of disease, and is often heard in hysterical females over the entire chest. Bronchial respiration may occur over any part of the lung, in dilatation of the bronchi, pleuritic effusion, and pulmonary consolidation.

2. *Co-existence of other signs.*—It would be unsafe to form an opinion in all cases upon position only, because an idopathatic inflammation may occupy the upper lobes, and the physical state of the lungs be thus rendered analagous to that produced by tubercle; although such an event is comparatively rare. Other signs, therefore should be sought for—such as the form and mobility of the chest, and some yet to be considered: percussion and application of the hand should be practised, as they will remove any uncertainty as regards nearly all affections but pneumonia, which causes dulness of sound and increase of vocal fremitus. Lastly, in all cases, and especially where there is a doubt, the patients general history should be taken into account, when it will rarely happen that we form an incorrect diagnois. *Med. Gaz., May 25, 1849, p. 963.*

[Dr. Cotton proceeds to give a brief account of the various morbid sounds heard by auscultation, especially those which are chiefly connected with phthisis. He classified the sounds into (1) those depending upon morbid secretion, and (2) those depending upon altered physical state of the lung; and gives the following arrangement of them, according to the diseases in which they occur:]

Bronchitis.	Sibilant rhonchus. Sonorous ,, Sub-crepitant ,, Mucous ,,
Pneumonia.	Crepitant rhonchus. Sub-crepitant ,,
Pleurisy	Friction murmurs.
Phthisis.	Dry crackling rhonchus Humid crackling ,, Sub-crepitant ,, Cavernulous ,, Cavernous ,, Crepitant ,, Pulmonary crumpling sound Friction murmur
Pulmonary congestion.	Sub-crepitant rhonchus. Mucous ,,
Dilated bronchi.	Cavernulous rhonchus. Cavernous ,,

In this arrangement the only sounds not occuring in two divisions are the varieties of crackling rhonchi, and the pulmonary crumpling; these are consequently *direct* signs of phthisis, trust-worthy under any circumstances; the rest becomes so only under certain conditions, such as position, and co-existing symptoms, and may be called *indirect*, as indicative of disease which may or may not be secondary to tubercular irritation.

The period during which tubercle seems to act merely mechanically, by impeding the proper function of the lung, varies considerably; in rapid cases inflammatory action takes place almost simultaneously with their deposition, but in the chronic form it may not happen for months or years, when the tubercles are said to be latent.

When inflammation occurs it is generally limited to the neighbourhood of the tubercular matter, but may extend more or less over the entire lung; in the former case its presence, as indirect evidence of phthisis, is highly valuable, and when according with the general symptoms, conclusive; but in the latter some uncertainty may prevail, although the history and progress of the case will generally lead to a right diagnosis.

I shall now describe in succession the relation of the preceding sounds to the first stage of phthisis; and first of those which act *indirectly*.

Phthisical patients are very liable to general bronchitis, known by sibilant and sonorous rhonchi in most parts of the chest, whereby the respiration is masked, and the tubercular affection liable to be overlooked, especially as percussion here loses something of its value, because it is just possible that slight dulness may depend upon accumulated mucus: such cases should be examined as the inflammation declines, when some rhonchi will be found lingering about the upper part of the lungs;—exactly the contrary to what happens in idiopathic bronchitis.. Sibilant and sonorous rhonchi, unless under such circumstances, are of little importance as evidence of early phthisis, because the local bronchitis resulting from the irritation of tubercles is seldom seated in the larger bronchial tubes.

Subcrepitant rhonchus, indicative of inflammation in the smaller bronchi (capillary bronchitis), is a valuable sign of tubercles, and, although more common after softening has commenced, may occur during any stage of the disease, particularly amongst the poor, and those most exposed to changes of temperature. Capillary bronchitis may be idiopathic, as well as secondary to tubercle; but the former invariably attacks both sides pretty equally, and begins at the base of the lungs, whilst the latter is strictly local, or occupies only the diseased side; hence comes the following practical rule,—subcrepitant rhonchi, either at the apex or base of one lung only, declare the presence of tubercles in that side; but when at both bases, or throughout both lungs, they point rather to an idiopathic inflammation; in the latter case, however, the conclusion is less certain than in the other, inasmuch as if tubercles exist to a tolerably equal extent at both apices, a similar result might happen. When capillary bronchitis attacks the base of a tuberculous lung, in most cases the upper lobe is likewise affected, and the inflammation may be heard extending from each point, until, by meeting towards the centre, the whole lung becomes filled with subcrepitant râles.

I have never heard a mucous rhonchus in the situation of tubercles before softening has commenced; unless it be the variety called "submucous." occurring in the smaller tubes, and hardly distinguishable from the subcrepitant, which may sometimes be met with after hæmoptysis has taken place, not only in the seat of the disease, but in distant parts of the lung—when it is probably due to the presence of blood.

Crepitant rhonchus (fine crepitation)—the characteristic of pneumonia—is of a rare occurrence with tubercular disease; simply because the local inflammation caused by tubercle is much more frequently of the smaller bronchi than the parenchyma of the lung, and when the latter is affected it would seem to be more often in a congestive than inflammatory state. In 400 out-patients examined at this hospital, I have not met with an unequivocal fine crepitation in the vicinity of tubercle—in other words, with tubercular pneumonia; but, without doubt, it occasionally exists: I can only speak practically of its rarity. Fine crepitation at the apex of either lung should always excite strong suspicion of phthisis; but since the idiopathic pneumonia sometimes occupies the upper lobes, further evidence,

and particularly the general history of the case, would be required to determine its real signification.

Friction murmurs are more commonly met with during the first stage than crepitant rhonchus—that is to say, local pleurisy is less rare than pneumonia: in the same number of cases I have discovered them about ten times; they were invariably of a creaking character, and very transient. It is singular that in every instance other symptoms were but indistinctly marked, which might lead to the inference that the tubercles were situated superficially, and the pleura consequently irritated, whilst the lung itself was but little implicated—circumstances naturally favourable both to the existence and detection of local pleurisy. Whenever an unequivocal friction murmur is limited to the apex of the lung, it becomes a valuable sign, and justifies the suspicion of pleurisy resulting from tubercular irritation.

The relation of cavernulous and cavernous rhonchi to phthisis will be considered hereafter, in treating of the third stage.

We now come to the varieties of crackling rhonchi—viz. dry and humid, which, unlike any of the preceding, are *direct* indications of phthisis, and never occur in any other disease. Fortunately there are none better named, more readily recognized, or more easily remembered; and although their mechanism is unexplained, they have been so universally found to co-exist with tubercles as to leave no doubt of their relation as cause and effect. The dry rhonchus belongs to the first stage, and the humid to the second; therefore, at present I shall only dwell upon the former. This râle is never heard at the very commencement of the disease, but it is probable that there are few or no cases which do not present it for a shorter or longer time towards the latter part of the first stage. Its general origin may be thus stated:—after many weeks, or even months, of the earlier signs—such as diminished resonance, jerking, harsh, or weak respiration, one or two dry clicks are heard during inspiration, and about the same time the breathing becomes more impaired—either less complete or bronchial, with prolonged expiration. One single click is enough for diagnosis, and upon such evidence alone I have often founded it; but two, three or more are usually heard; at first they are only with inspiration; but as the case advances they may attend both murmurs, and in proportion to their abundance with the expiatory is the increase of the disease declared.

I always regard dry crackling as an unfavourable sign, as it seems to indicate either the passage of tubercles from their state of latency, or a sudden increase in their number; for, when once established, it invariably remains, until superseded by the humid variety, or other moist rhonchi, and may be heard at every subsequent examination, if not in tranquil, at least in forced respiration. Its duration is variable: in some cases it is rapidly transformed, and in others remains many weeks; but I cannot remember having heard it in the same spot longer than three months.

Pulmonary crumpling,—said by its discoverer to occur in one-eighth of all cases of phthisis,—has had its very existence denied by subsequent writers. Having had unusual opportunities of examining early cases, I have particularly attended to this subject, and can, without hesitation, declare, that, whilst I am somewhat sceptical as to his first two varieties, I have no doubt of the third, although I believe he has overstated its frequency. I have often heard a rhonchus at the upper part of the chest of a dry plaintive character, much resembling the new leather friction sound, and have thought that to something of this kind were to be referred the first two varieties; but in all such instances there have always been sonorous or sibilant rhonchi in other parts of the lung, and the murmur has not only been absent at a subsequent examination, but disappeared at the time by coughing; hence, I have generally attributed it to their modification.

On the third variety, resembling the sound of crumpling tissue paper, I

have met with several instances. According to my experience, it occurs only at the apices of the lungs, distinctly conveying the idea of their expansion under difficulty; is most audible posteriorly in the supra-spinous regions; is limited to inspiration, and sometimes heard only during forced breathing; it appears to accompany only the early stage, usually before other symptoms are much developed; remains but a short period (hence, perhaps, the infrequency of its detection); and is invariably succeeded either by harsh respiration, or dry crackling rhonchus. In consequence of the doubt attending it, I once called the attention of two physicians, well practised in auscultation, to three well-marked examples, when they admitted that the sound was neither a friction murmur nor rhonchus, and that no title could convey a better idea of its character than that adopted by M. Fournet. From its rarity and short duration, it ranks not amongst the most important signs of phthisis; but, when distinctly ascertained, it may be regarded as pretty conclusive evidence of the disease.

Med. Gaz., June 1, 1849, p. 942.

[With regard to the value of bronchophony as a sign of morbid changes, Dr. C. observes:]

When it is the result of disease, one of two pathological conditions is declared—either a portion of the lung is consolidated, and the sound of the voice thereby better conducted to the surface, or a bronchial tube is considerably dilated. Although the latter is a comparatively rare affection, it is possible to lead to erroneous diagnosis, since percussion in both cases furnishes the same result—viz. more or less dulness; but the history of the case, and the state of the patient, would in most instances declare the real nature of the disease.

Morbid bronchophony varies in intensity, and is sometimes so loud as to be positively painful to the ear, but in other respects it is not distinguishable from the natural type, and oftentimes can be called morbid only from its position. It is in the neighbourhood of the clavicles, and in the supra-spinous regions, that its importance lies in connection with phthisis; if found equally loud on the two sides, the left is probably morbid; if there be any excess on the left, it is undoubtedly so; but a greater amount on the right is unimportant, unless it be very considerable, when tubercular disease, may be suspected. Bronchophony seldom appears until the first stage is somewhat advanced, and, in the great majority of instances, is accompanied with a bronchial respiration; but this is not necessarily the case: for often it is distinctly marked when there is merely a slight dulness and resistance on percussion, and the respiration is weak or jerking. When once established, it will generally continue, but, under proper treatment, may sometimes be lessened; too frequently, however, it increases, and passes by insensible degrees into pectoriloquy, which, as a sign of the third stage, will be considered hereafter. On the whole, I consider bronchophony, compared with other physical signs, as of secondary importance, from the circumstance, that in health it is subject to great variation, and in disease is usually accompanied by evidence far less equivocal; but cases may sometimes occur in which it may be brought into use as a not unimportant auxiliary.

If a patient exhibiting bronchophony, instead of speaking, be directed to cough, a sound (bronchial cough), varying in intensity, and often most painfully loud, will be communicated to the ear. Similar remarks will apply to this as to the bronchial voice, or bronchophony, and, for the same reasons, its importance may be estimated at the same amount. I confess that I rarely employ this sign, simply because there are others more easily recognized, and less liable to variation; but when the case is obscure, and our diagnosis must depend rather upon the coincidence of a number of symptoms, than the unequivocal character of any one, its employment may be useful.

I shall now briefly recapitulate, by an imaginary description of the examination of a patient in the first stage of the disease.

A person presents himself with some one or more of the general symptoms of consumption, but too obscure and equivocal to determine the real nature of his malady. Upon examining his chest, it is possible that one side may be found slightly bulged beneath the clavicle; but more probable, either that there is no visible difference in the two sides, or that one is somewhat more depressed than the other,—in other words, that one clavicle appears to stand out more than its fellow.

Either of these excites suspicion, but is not sufficiently important to justify any conclusion, and we proceed further. We watch the ordinary movements of the chest, and direct the patient to take a full inspiration, when, perhaps the upper regions of the two sides are not equally expanded, and if the diminution correspond with the preceding sign, there is reason to suspect phthisis; but as it will generally happen that no very evident difference is discoverable, we proceed onwards in the examination. Upon the suspected part we place the hand lightly, whilst the patient speaks, when there may be an increase of vocal fremitus;—or we ascertain whether the heart's sounds are unduly conducted to that point, recollecting that the former is chiefly applicable to the left side, and the latter to the right;—or we listen for a murmur in the subsclavian artery, taking care not to place too much reliance upon its discovery. We then percuss, and find more or less dullness and resistance above, upon, or beneath the clavicle, or in the supra-spinous region. It may be that we have now the first indication of the disease, most of the preceding signs having been deficient; but should ordinary percussion be somewhat doubtful in its results, we order the patient to take a deep breath, and percuss whilst he is holding it, when a difference is perhaps more readily detected.

The stethoscope now comes to our assistance to determine the value of the previous evidence: the respiration is found weak or jerking; the expiration is prolonged beyond its healthy limits; or perhaps the case is sufficiently advanced to render it harsh, or even bronchial. It is possible that we now discover the pulmonary crumpling sound, but its absence is unimportant; and very likely there are a few dry crackling ronchi. If it should happen that our patient is suffering from bronchitis of the larger tubes, we must not be too hasty in arriving at a conclusion; but if the smaller bronchi only are implicated, we shall find subcrepitant ronchi either all over the suspected side, or chiefly seated in the upper lobe. A friction murmur may perhaps be heard at the apex; and it is just possible, even the fine crepitation of pneumonia. If further proof be desirable, from the absence of some of the preceding, we direct the patient to speak or cough whilst the stethoscope is applied, when bronchophony or bronchial cough may be present. And thus have we arrived at the positive conclusion that our patient is in the first stage of tubercular disease.

Med. Gaz. June 8, 1849, p. 991.

[In the *second stage* of phthisis, we have the signs which accompanied the first stage more extensively and more unequivocally developed, and in addition to these we find others peculiar to the changed condition of the tubercular matter. Dr. Cotton gives the following description of this period of the disease:]

A patient in the second stage will generally have the infra-clavicular region of one side visibly flattened, and less capable of expansion during ordinary and forced breathing, than the other. If the hand be applied to that part, both vocal and tussive fremitus will be found increased: and, on percussion, it will exhibit more distinctly than formerly, both dulness and resistance. The respiration will probably possess some of the morbid characters already described,—most frequently it is harsh or bronchial. The sounds of the heart are now often heard unnaturally on the diseased side; bronchophony and bronchial cough are much more developed; and the pulmonary crumpling, if has existed, ceases to be heard.

Fortunately, there is nothing in the whole practice of auscultation more

easy than to detect the very beginning of the softening process; the dry crackling ronchus has simply to become humid, and the evidence is complete; a number of bubbling subcrepitant, or large mucous râle, have but to occupy the diseased part, and the transformation becomes more than probable.

A knowledge of the humid crackling ronchus is therefore of the greatest importance, but is easily acquired, as it resembles the dry one, in all other respects than its moistness, having the same characteristic click. They are found to pass gradually into each other, and every intervening state, from the perfect dryness of the one, to the well-marked humidity of the other, is constantly heard; so that it is sometimes difficult to determine to which the sound should be referred. It is impossible, however, to doubt its tubercular origin; and any deviation from positive dryness, justifies the conclusion that transformation has begun.

On the first appearance of the liquid rhonchi, they seldom exceed the others in frequency, but with the advance of the case, they become much more numerous, and, at the same time, more frequent with expiration,—more distinctly liquid and bubbling,—until at length they acquire a somewhat metallic quality, and pass into others distinctive of the last stage; these changes being as gradual as in the former case. Nothing is more variable than the period of their duration, but it may be said to be decidedly shorter than that of the dry variety. The mode of their production is not thoroughly understood, but for all practical purposes this is not important: it is sufficient to know that a humid crackling rhonchus, under all circumstances, tells of softening tubercle.

Humid crackling—the large and moist subcrepitant—and the larger kind of mucous rhonchi, therefore, are signs announcing the second stage, but they differ in their value. The first is positive and unequivocal, never occurring under any other circumstance; the second and third are of less importance, since they require, like other indirect signs, considerations similar to those spoken of in a previous lecture—viz. their position and the coexistence of other signs, to determine their signification. Either of them may occur alone, or be so intermixed with each other, as to make their distinction impossible. With regard to their comparative frequency, the humid crackling by itself is the most common; next to this, is its combination with the sub-crepitant; but the latter is often found alone, or in conjunction with the mucous;—great variety in this respect constantly takes place.

There is a variety of mucous rhonchus with a clear metallic note, very liquid and bubbling, which, although difficult to describe, is so peculiar as to render its recognition, after having once been heard, a very easy matter. I have reason to believe that the humid crackling rhonchus generally passes into it, and that the others sometimes do the same: it pronounces with great certainty that the second stage is much advanced, and not far distant from the third. When once established, I have invariably found it permanent, until, by gradually increasing, it has become lost in rhonci characterizing the last stage, or if the secretion has diminished, it has been succeeded by cavernous respiration. I have long regarded this sound as the sure forerunner of tuberculous excavations, and have too often been able to verify the accuracy of the conclusion.

The part where softening first shows itself, will generally be found to be that in which there were the earliest signs of crude tubercle; and if the lung be now examined, those parts where there was formerly no appreciable deviations from the healthy conditions, will exhibit more or less evidence of incipient tuberculosis. It appears that there is at this time a tendency to the rapid deposition of tubercle,—the effect of some further reduction in the resisting powers of the patient, under which, those tubercles which are the oldest undergo transformations. *Med. Gaz., June 15, 1849, p. 1026.*

[There is no positive line of separation between the second and third

stages of phthisis, the one passing imperceptibly into the other; but the *third stage* is said to have commenced, when there is proof of the smallest excavation. The majority of the signs of the third stage consist merely in an increase of those met with in the second: the peculiar ones,—those which indicate the existence of cavities,—are thus described by Dr. Cotton:]

Where the cavities are small.—I have already said that the humid crackling, mucous, and subcrepitant rhonchi pass into one nearly allied to the mucous, but essentially metallic in its quality: when this is fully established the commencement of very minute cavities may be safely diagnosed. If a patient in this condition be examined from time to time, the rhonchus will be found more and more characteristic, until, by increasing in size and humidity, it at length becomes decidedly cavernulous.

The true cavernulous rhonchus is a clear, bubbling, and metallic sound, taking place both with inspiration and expiration, but especially the former; varying in loudness and frequency according to the amount of secretion; and giving to the ear the impression of being produced in a small and hollow space: it is easily recognized, and declares unequivocally the establishment of the final stage. The respiration at this time is usually more or less bronchial; sometimes merely harsh; but often distinguished with difficulty, from being masked by the rhonci. I have observed that the heart's sounds, especially the second, now become more than ever distinct on the diseased side, which although not amongst the positive signs of excavations, may be sometimes recollected with advantage. Bronchophony is now more positive than formerly, and oftentimes so loud, as to be painful to the auscultator,—the result of increased conducting power of the lung, with emaciation of the thoracic walls.

Where the cavities are large.—When vomicæ are of some size, there arise a new set of signs, not yet mentioned, and with which it is highly necessary, but happily equally easy, to be familiar: they consist of still further modifications in the percussion sound, the respiration, the rhonci, and vocal resonance,—all of which I shall explain separately.

Every variety of sound, from absolute dulness to what is termed amphoric resonance, may attend percussion over a cavity, according to its size, position, and the state of the surrounding parts: the force employed also makes a considerable difference, since, if gentle, it will proceed from the superficial, and, if hard, from the deeper parts. Positive dulness of sound, with perfect inelasticity of the thoracic wall, is by far the most common. Not unfreqnently, however, the sound is so little altered from that of health, owing probably to the morbid clearness of the cavity balancing the dulness of the neighbouring induration, that it is not very easy, without other evidence, even to ascertain what side is diseased. Amphoric resonance is heard only over large cavities seated close to the surface, or separated from it by indurated lung, and in the latter case requires rather strong percussion for its production: it is very characteristic, and exactly imitated by fillipping the cheek when the mouth is inflated. When the percussion sound is more or less amphoric, it frequently happens that by directing the patient to keep his mouth open whilst the chest is struck somewhat smartly, a new character is developed, so peculiar as to decide at once the history of the case,—I allude to the cracked-pot sound, first described by Laennec under the name of "bruit de pot fêlé." It is impossible by description to do justice to its peculiarity; but this is well expressed by its own designation, as it exactly resembles the noise produced by striking an empty and cracked pipkin. It seems necessary to its development that the cavity should be large, tolerably dry, and communicating freely with the bronchi; and that the mouth should be widely open. In no case have I heard it clearly marked in the absence of the last condition. Such a combination, however, does not invariably produce the cracked-pot sound, for reasons, perhaps, difficult of explanation; and if I were to hazard an opinion as to its frequency, I should say, that it may be met with in about one-third of such

cases. On the whole, percussion is a capricious guide to vomicæ;—more frequently affording no evidence of their presence; sometimes calculating to mislead even as to the nature of the disease, but occasionally announcing them in the most unequivocal manner.

By the respiration alone, cavities of tolerable size may generally be detected, from the air in passing through them giving rise to a sound which is properly termed cavernous, easily distinguished by its hollow and metallic character, and at once telling of its production in an empty space.

Cavernous respiration often has its origin in a gradual increase of the bronchial type—the one passing into the other—but it may succeed any other morbid variety, or begin in spots, where, during the second stage, scarcely any respiration could be heard. Intense bronchial respiration is very closely allied to cavernous, and from a confusion of the two by inexperienced auscultators, I have seen patients unnecessarily alarmed, and most undeserved discredit thrown upon the stethoscope. They may be distinguished by the bronchial giving rise to the idea of its originating in a dry tube, whilst the cavernous seems to be produced in a hollow space, and is distinctly metallic; but it must be confessed that cases now and then occur, in which the most experienced have some difficulty in deciding between them.

Where the cavity is of very great extent, and tolerably free from secretion, the respiration undergoes another change, and is said to be amphoric, —a quality easily recognised by its resemblance to the sound caused by blowing into an empty bottle.

Amphoric respiration is generally, but not invariably, attended by amphoric resonance on percussion, and, like the latter, requires for its development, that the cavity should be large, and situated near the surface. There is in reality no line of separation between cavernous and amphoric breathing; the one merges into the other.

The only condition at all likely to be mistaken for vomicæ, from the evidence of cavernous respiration, is extreme dilatation of the bronchial tubes —a very rare disease, more common in the centre than at the apex of the lung, and in its attendant symptoms so different from the last stage of phthisis, as scarcely to justify the one being ever mistaken for the other. Cavernous respiration is dry or humid, according to the absence or otherwise of secretion in the cavity, and in the latter case is associated with, and even frequenrly masked by, a very characteristic ronchus termed cavernous, or from another of its properties, gurgling.

Cavernous rhonchus has many varieties, according to the amount and consistence of the secretion, and the size of the cavity: sometimes it resembles the bursting of large bubbles, at others, the agitation of some thick and viscid substance in contact with air, but in all instances it conveys the idea of metallic hollowness, and can scarcely fail, even to the most inexperienced, to tell at once of the seat of its production. It varies in tone, and is sometimes heard by the patients themselves, who are thus enabled to point out the exact situation of the cavity; and not unfrequently it is loud enough to be distinguished at some distance from the patient's chest. Persons with cavities will sometimes describe a sensation like the ticking of a clock, and if the stethoscope be applied, an indistinct impulse is communicated to the ear, apparently produced by the agitation of fluid by the heart's action.

When amphoric resonance, of the cracked-pot percussion-sound, or amphoric respiration, announce a very large cavity, gurgling rhonchus will seldom be heard, except perhaps at the very bottom, but a new sound may be developed by an effort of the patient, such as coughing, speaking or breathing loudly, and sometimes without it—termed metallic tinkling.

It would be useless to enter into the many speculations as to the cause of this phenomenon; it will suffice to state that the sound exactly resembles the falling of a sharp metallic substance into a glass or metal jar;—sometimes reverberating and giving rise to what has been called metallic echo;

and that it declares the existence of a hollow space filled with air, and containing a fluid, I regard it as a very rare attendant upon tuberculous cavities, never having met with it in the numerous cases I have examined; in hydro-pneumothorax it is very common, and the anatomical analogy between the two diseases would lead to the supposition of the former occasionally giving rise to it; I can only affirm that it seldom does so.

The last sign to be considered is pectoriloquy, which is a yet further modification of vocal resonance, and bears the same relation to bronchophony as cavernous respiration does to bronchial, and cavernous rhonchus to the crackling varieties. Pectoriloquy signifies the cavernous voice, and if, instead of speaking, the patient cough, the tussive resonance will be similarly modified (cavernous cough). In pectoriloquy the sound is more circumscribed than in bronchophony, the words are more articulate, and seem produced within the stethoscope, and close to the ear. Very often, although there is abundant proof of a cavity, there is but little pectoriloquy, or it is hardly separable from bronchophony, which may arise from a want of certain circumstances indispensable to the production of the former—viz. a moderate size, emptiness, and closeness to the surface, of the vomicæ. The loudness of the voice has but little influence in its production; but if the patient be directed to whisper, it becomes more distinctive (whispering pectoriloquy).

Of all the signs of pulmonary excavations, I believe pectoriloquy is the least to be depended upon; because, in the first place, it is not very often met with in a perfect form; and, in the next, many healthy persons, with thin chests and peculiar intonation of voice, have what may really be termed a natural pectoriloquy. I have especially observed this amongst French persons, and attributed it to the peculiar tone of their language; and it was in the French hospitals that I first began to distrust pectoriloquy. I confess that I am now seldom in the habit of employing it in diagnosis, both for these reasons and because other signs are generally sufficient, although I admit, that when well marked, it is very characteristic; whenever I desire its assistance, I invariably listen for "whispering pectoriloquy."

The tussive resonance in cavities (cavernous cough) is of the same value as the vocal, and for the same reasons, but when well developed is perhaps even more characteristic. It is a ringing and metallic sound apparently produced close to the ear, often of sufficient intensity to cause a very painful sensation to the auscultator, and requires for its production the same conditions as pectoriloquy.

When the cavity is of very large size, and under circumstances favourable to the production both of the amphoric sound on percussion and amphoric respiration, the resonance of the voice and the cough is attendant with still further modification. When the patient speaks, the voice (amphoric voice) instead of being close to the ear and articulate, as in pectoriloquy, has more the character of bronchophony, but is hollow and metallic, and resembles the sound produced by speaking into an empty vessel. Precisely the same quality of sound attends coughing (amphoric cough) and the two will generally be found together. On the whole I believe the amphoric voice and cough are of more value than the cavernous, being more peculiar—impossible of imitation in any healthy condition—and under favourable circumstances, more constant in occurrence. There are but two pathological states which can produce these amphoric sounds, viz. large vomicæ and pneumothorax; but with the aid of other signs, and the history of the case, one can rarely be mistaken for the other; for whilst the former is nearly always at the upper part of the lung, and of comparatively limited extent, the latter exhibits itself over the greater part, if not the whole, of one side; the sudden invasion and severity of attack would also suggest the idea of pneumothorax, by contrasting strongly with the chronic course of a large vomica.

Med. Gaz., June 22., 1849., p. 1089.

39.—HÆMOPTYSIS, AS A SYMPTOM OF PHTHISIS.—By Dr. W. H. Walshe.

The diagnostic value of hæmoptysis, as a symptom of tubercle, is estimated very highly by Dr. Walshe. It appears that, with the exception of cancer of the lung, aortic aneurism, and disease of the heart, there are very few cases in which a material hemorrhage takes place from the lung independently of tubercles. Neither those cases of apparently simple chronic bronchitis, nor those of irregular menstruation, in which blood is voided from the lungs to any extent, appear to be exceptions to this proposition, although the tubercles may remain for a considerable period latent after the occurrence of the hæmoptysis. We give the following most important conclusion in the author's own words:—

"The tendency of my experience, then, is clearly to show the vast frequency with which hæmoptysis is in some manner or other an attendant on tuberculous disease. The fact, that individuals are occasionally met with who, after having had more or less hæmoptysis, live on to a good age without exhibiting phthisical symptoms, does not invalidate this result: it simply shows that tuberculization tending to hæmoptysis may, as well as that not so tending, undergo spontaneous suspension; and the consideration of the point becomes rather a question of prognosis than anything else.

Monthly Jour., Oct. 1849, p. 1160.

40.—INTERCOSTAL NEURALGIA AS A SIGN OF PHTHISIS.—By M. Beau.

Intercostal neuritis is an affection which habitually coincides with inflammation of the pleura, whether simple or combined with pulmonary inflammation. The explanation of this coincidence is found in the anatomical relations of the pleura and intercostal nerves which are in immediate contact at the posterior part of the thorax. According to the author, the *stitch* in the side, which attends affections of the pleuræ, and most severe pulmonary affections in which the pleuræ are involved, is owing to inflammation of the intercostal nerves, which are found enlarged to two or three times their normal size, adherent to the pleuræ or to the cellular tissue in which they lie, and, in acute cases, much injected. The degree to which the nerves are affected bears an exact relation to the amount of affection of the pleuræ, and is therefore evidently secondary to it.

When the lung is attacked by tubercles, it almost invariably happens that adhesions of the pleuræ take place in their neighbourhood. The adhesions, like the tubercles, are at first confined to the summit of the lung, and are attended by the same change in the intercostal nerves as in the case of acute affections, only that the lesion is chronic in its development, and not generally characterized by increased vascularity.

Thus the author explains the dull pains which occur at the summit of the thorax in phthisical persons. Sometimes these pains are sufficiently distinctly marked, and even neuralgic in character; they radiate into the neck and supra spinous fossa, or even along the arm, as in angina pectoris; this divergence being due to the inosculations between the intercostal nerves and those of the cervical and brachial plexuses. But it is not always so, nor can these pains be said to be an habitual symptom of phthisis. Nevertheless the lesion of the intercostal nerves is almost always found after death from this disease.

In seeking to explain this contradiction, M. Beau has discovered a symptom, to which he attaches considerable importance in the diagnosis of doubtful cases of phthisis. Even where no pain is manifested under ordinary circumstances, he finds that this symptom may be almost constantly educed by moderate pressure with the finger on the anterior or sternal extremity of the intercostal spaces. In early cases it is limited to the upper part of the chest, and is, generally speaking, more severe in the first space than in the second, in the second than in the third, &c. It varies in inten-

sity, but sometimes is so considerable as to cause an involuntary shrinking on the part of the patient. It is more severe and affects the greatest number of spaces, on the side in which the tuberculization has advanced farthest.

This symptom is almost constant in phthisis pulmonalis. Among fifteen cases under M. Beau's observation at the time of writing, it was not absent in more than one; and only one of these cases presented the symptom of *spontaneous* pain. The author, therefore, thinks it will prove a useful diagnostic mark in cases where the physical signs of phthisis are marked by bronchitis. The predominance of the pain in the anterior part of the spaces, where the alteration of the nerves is least considerable, is ascribed by M. Beau to the circumstance that, when a nerve is diseased in any part of its course, the morbid sensibility is always referred to its peripheric extremity.

Another form of the intercostal neuralgia of phthisical patients is the pain between the shoulders which has been so frequently described as characteristic of phthisis. In these cases the author has always found that the pain may be traced along the intercostal spaces to the anterior part of the chest. M. Beau had previously endeavoured to demonstrate the connection between intercostal neuralgia and dyspepsia: he now considers both these symptoms as related to phthisis, of which disease dyspepsia, as is well known, is a frequent accompaniment.—*L'Union Medicale, July* 21, 1849; *and Archives Generales de Medecine, Feb.* 7, 1847.

Monthly Retrospect, Oct., 1849, *p.* 199.

41.—SUPPOSED HEREDITARY NATURE OF PHTHISIS.—By Dr. W. H. Walshe.

[The following statements, which are opposed to the prevailing opinions on this subject, are given by Dr. Walshe as the result of a careful examination of a large number of cases at the Hospital for consumption. Dr. W. says:]

From a comparative analysis of the family histories of 446 persons, 162 of them phthisical, 284 non-phthisical, the final conclusion flows:—*that phthisis in the adult hospital-population of this country is, to a slight amount only, a disease demonstrably derived from parents.* It is possible, (nay, indeed, *probable*. for, in adults having a parental taint, the outbreak of the disease occurred a mean period of two years and nine months earlier than in those free from such taint,) that, were investigation extended to infancy, childhood, and youth, the ratio of cases of parental taint among the phthisical, would be proportionably greater than it proves where inquiry is limited to adults. But on the other hand, there is no single valid reason for *supposing* (prior to actual experience) that the increase in that ratio would be of more than trifling amount. Again, whether the law differs in the adult portion of the middle and upper classes of society, from that holding in the humbler classes (those supplying hospitals,) can only be positively determined by an analysis of family histories collected among the former classes; meanwhile it appears justifiable to doubt the reality of any such difference.

Monthly Jour., Oct., 1849, *p.* 1159.

42.—NATURE OF SCROFULA AND TUBERCLE.—By Dr. W. Addison, F.R.S.

[Dr. Addison shows in the first place, that the earliest stage of every texture is characterised by corpuscular or cell-growth.]

The cells possess, at first, very slight coherency; at a later period, in a higher development, they form a coherent tissue, which is illustrated in plants by the chlorophyll-cells of the leaf, and in animals by the parenchyma of the liver, and many other structures. A still later development is that of fibres and tubes both in plants and animals; and last of all come the most highly elaborated textures, peculiar to the latter,—cartilege (?) and bone.

The law of metamorphosis of organised structures may be expressed as follows—The lowest type is found in non-coherent cells; the next in cellular tissues; the next in fibres and cells conjoined; and the highest in dense structures, such as cartilage and bone. The metamorphosis is *regular* when all these structures are developed according to the normal type; it is *irregular* when all the elements are nominally present, but in altered amount or grouping; and it is *retrograde* when the higher phase is in any instance exchanged for the lower.

In the permanent tissues of the adult animal, all these different types may be found. In the more dense and coherent structures, whose function is chiefly mechanical, the fibrous and the higher types prevail; in the secreting structures, on the contrary, including the mucous membranes, the lower or cell-elements are more abundant, and are perpetually discharged to be replaced by new cells The blood is a fluid composed entirely of non-coherent cells, and therefore belonging to the lowest type of metamorphosis. From it the tissues are formed by the development of its colourless cells or lymph corpuscles through the successive stages of the regular metamorphosis. In corroboration of this doctrine (which we may observe is peculiar to Dr. Addison), he adduces the fact that the earliest stages of cell-growth throughout the body exactly resemble these corpuscules; as may be seen in the cells detached at an early period from mucous structures, and also in pus-corpuscles. In like manner, "no wounded or abraded texture heals, and no diseased texture ulcerates, without discharging an abundance of colourless cells; some of which are, in the former case, carried into the higher grades of development, and go to form tissue; while in the latter, they are all cast off without undergoing development. In both cases, a large excess of cellular elements is set free, in virtue of a law of nature, by which any cause producing stimulation of a part produces a flow of blood and a discharge of colourless cells at the seat of irritation. Inflammation therefore and reparative action, consist of the crowding of these colourless cells into a part, and their subsequent metamorphosis into higher types of structure. They are thus exaggerations of normal processes of growth.

In certain conditions of the system the metamorphosis of tissue takes place *imperfectly*. The colourless cells which are poured out on the surface of wounds (forming granulations), are slow to undergo the change into tissue: in this case the inflammation is called *unhealthy* or *asthenic*. If a similar defect or development accompany the ordinary process of growth, the normal textures become gradually exchanged for or supplanted by, the products of a *retrograde metamorphosis*, and scrofulous disease is developed.

Scrofula, therefore is essentially, according to Dr. Addison, a retrograde metamorphosis of the tissues, in which colourless cells of a low type are substituted for the coherent cells and fibres, or possibly for the cartilages, bones, &c., which form the structures of the perfect human body. This morbid condition may take the form of ulcers, in which the natural tissues become more or less gradually broken down in pus, the cells of which appear to have no power of forming themselves, first into granulations and then into tissue, as in natural inflammation; or it may result in the formation of tubercles, where the colourless cells are deposited in particular points or centres, from which they spread, and finally break down, leaving cavities or ulcers. The "*vis scrofulosa*," as Dr. Addison calls this tendency, may also manifest itself in the asthenic inflammation following a wound, or the imperfect reparation of a fracture.

"Inflammation, and organic disease, are appropriate terms when new products *arise in addition to*, or upon, the normal textures; for instance—false membranes—exudations—secreting villi or granulations *on* the pleura; layers of lymph *on* the iris or pia mater; solid matter *in* the air-cells of the lungs; or red fungosities *sprouting from* the conjunctiva of the eye. Scrofula and scrofulous diseases are applicable terms when the new products *destroy* the natural fabric—fungosities *supplanting* the cartilage of the joint, or the

hard structure of a bone—ulcerations yielding pus *displacing* the papillæ of mucous membranes—and villous secreting fabrics *destroying* the respiratory parenchyma."

As in the case of plants, the retrograde metamorphosis may be the result of two causes; there may be an original taint of constitution in the subject of it, or this taint may be acquired from the presence of unfavourable external conditions. Once acquired, it may be transmitted to offspring, and may be lost again at a future period.

Such are the outlines of the very remarkable theory of Dr. Addison, which, as the physiologist will at once perceive, contains far too many true and too many doubtful elements to be made the subject of hasty criticism; undeundeniably bearing, as it does, the traces of profound thought and extensive observation. It is obvious that a difficulty, which presents itself at the outset, is Dr. Addison's repudiation of the *specific* character of the tubercle-corpuscle, as described by Lebert, who has decidedly every claim to be considered the highest authority on this subject. And yet we can bear out, from personal examination, the following statement of the author:—

"I have repeatedly examined with the microscope the material deposited in the air-cells of the lung in *pneumonia*, and compared its characters and appearance with that forming a tubercle, without being able to detect any more essential or specific difference between them than exist between purulent matter recently excreted and that of an old chronic abscess. The same class of objects, colourless cells and altered protoplasmatous matter, constitute in both cases the bulk of the material. And were we to imagine the fluid elements of old pus, removed or absorbed, the remaining *solid* matter would appear to possess the characters of tuberculous matter; the colourless elements of blood—pus and tubercle—passing by insensible gradations into each other"

Whether the above statement be the result of imperfect observation or not, it is certain that tubercle-cells are often distinguished with great difficulty, especially in secreting structures. *Monthly Jour., Oct.* 1849, *p.* 1158.

43.—APPLICATION OF NITRATE OF SILVER TO ULCERATIONS IN THE LARYNX.—By JAMES BEDINGFIELD, Esq., Stowmarket.

[Mr. Bedingfield states that he recommended the use of nitrate of silver in cases of ulceration of the larynx, in the *London Medical Repository*, so long ago as the year 1814. He still approves of its employment, but the difficulty is to get it efficiently applied. The solid nitrate would be more serviceable, Mr. Bedingfield thinks, but it is almost, if not quite impossible to apply it. We should, however, use the solution if it only afford moderate relief; and Mr. Bedingfield suggests what he thinks to be an improvement upon the method of applying it as recommended by Dr. H. Green, (see Retrospect, Part XVI., p. 119). He says:]

Instead of fastening the saturated sponge to a piece of whalebone, I would suggest that it should be attached to a hollow tube, pervious at both ends; for although an extraneous body thus introduced into the trachea must necessarily be very exciting, the introduction of an open tube would secure a free respiration. A large elastic male catheter, containing a piece of wire so bent as to give the instrument the requisite curvature, would probably answer the purpose. The root of the tongue might be depressed by a pair of forceps bent at right angles, with which I have frequently succeeded in removing extraneous bodies, both from the pharynx and meatus auditorius externus. The blades slightly separated, so as to pass on each side the epiglottis, into the pharynx, would, perhaps, be found more convenient than the rectangular spatula recommended by Dr. H. Green.

Prov. Med. and Surg. Jour., April 28, 1849, *p.* 401.

44.—AN INDICATION FOR THE PERFORMANCE OF TRACHEOTOMY.—By Dr. G. A. Rees.

[Speaking of an altered movement of the ribs in respiration, which he considers to be often an important symptom, especially in children, Dr. Rees says:]

The altered movement alluded to is observable at the moment of inspiration, when the ribs instead of being drawn outwards by the inspiratory muscles, as in healthy respiration, are, owing to the lesion of the lungs, or obstruction of the primary air-passages, forced inwards or backwards, from the external atmospheric pressure, thus diminishing instead of augmenting the transverse diameter of the thorax.

Dr. Sibson, in an interesting paper published in a late number of the *Gazette*, refers to this state of things, and says, "the same remarkable phenomenon is observed in cases requiring tracheotomy, when the obstruction to respiration in the larynx is extreme."

[Dr. Rees thinks that this symptom will guide us in deciding upon the question, often difficult, of the propriety of performing tracheotomy. He says:]

In croup and laryngitis, it will inform, to a degree, as to the state of the lungs, and assist the surgeon in deciding as to the propriety of tracheotomy being performed. If the altered movement be considerable, the lungs are yet free, and the incision may afford relief; but if with strongly marked bronchial or laryngeal breathing, the ribs are motionless, effusion has taken place in the pulmonary tissues, (augmenting the volume of these organs, whilst rendering them impermeable to air), and tracheotomy will be in vain.

Med. Gaz., June 1, 1849, *p.* 961.

45.—USE OF COFFEE IN HOOPING-COUGH.

Various medicines have from time to time been brought forward as specifics in hooping-cough; and some of them we have tried. To quinine, salicine, arsenic, and oxide of silver, we have given a fair trial in a considerable number of cases; and the result of this experience is, our belief that all of them; except the last named, possesses some power in checking the disease, when it has gone on for some time, and is marked by periodicity. When the hour of the recurrence of the fits comes to be accurately foretold, all of the above-named drugs given in full doses in anticipation of the attack, postpone, or entirely prevent it. In the early stages or latter, where there is some amount of bronchitis, the free use of stimulating embrocations, with occasional expectorants, and stomachics, and alteratives, (such as a powder composed of cusparia, trisnitrate of bismuth, and rhubarb,) are the means we trust to. When the cough assumes a distinctly periodic character, we recommend a trial of antiperiodic remedies and change of air, both of which measures, in many cases, prove of signal and speedy benefit.

From Pereira's summary of the therapeutic uses of coffee, it is not unlikely, however, to exercise some control in hooping-cough. "It has," says Pereira, "been employed as a febrifuge in intermittents; as a stomachic in some forms of dyspepsia; as an astringent in diarrhœa; and as a stimulant to the cerebro-spinal system in some nervous disorders" Floyer, Dr. Percival, and others, have used it in spasmodic asthma; and Laennec says, "I have seen several cases in which coffee was really useful."

The recommendation of coffee, in hooping-cough, seems decidedly to merit attention. Dr. Jules Guyot, who advocates the use of the remedy, writes thus in the Union Médicale for 24th April, 1849:—"*Cafe a l'eau*, hot, and well sugared, in suitable doses, taken four times or oftener, daily, will cure, in from two to four days, the most obstinate cases. For a child of two years, the dose is a teaspoonful; for a child of four years, a dessert spoonful; and for an elder patient a tablespoonful. To obtain a rapid and permanent

cure, it is necessary to conjoin with the coffee treatment a diet of fried and roast meat, taking care to mince it, if the child cannot masticate it sufficiently. The quantity of milk used, ought to be diminished; and farinaceous food, confectionaries, and fruits, must be entirely prohibited."

The alleged specific power of coffee in hooping-cough, was accidentally discovered by observing the following case:

A child of four years old, under rigid dietetic treatment for measles, was seized with congestion of the lungs, against which energetic antiphlogistic treatment was put in force. When Dr. Guyot was called in, death seemed imminent from violent paroxysms of cough, which induced such alarming suffocation and syncope, as to cause the patient to appear to be actually dead. Some spoonfuls of strong beef-tea, with some spoonfuls of sweet and hot infusion of the lime-tree, were prescribed. The child passed the night without fainting. On the following day, the same infusions were continued, and in addition, there was given a little bit of grilled and finely minced mutton, with the view of restoring strength as rapidly as possible: but a severe fit of coughing came on, which terminating in vomiting, caused ejection of the food; recourse was again had to the beef-tea, which provoked a similar fit of coughing, and was ejected. In these circumstances, with death apparently impending, a tea-spoonful of coffee was given after each tea-spoonful of beef-tea. Not only was the beef-tea retained; but, to my great surprise, the cough likewise ceased. Two hours afterwards, the child took with relish, a little bit of hashed cutlet, followed by a tea-spoonful of the coffee; the food was not ejected, digestion went on naturally, the night was passed in comfortable sleep, there was no more cough:—and in truth the child was saved. On the following day, the treatment was continued, and there was a continuance of a like satisfactory state. On the third day, however, the relations omitted the coffee, when the cough returned after the first meal, with all the characteristic violence of well-formed hooping-cough: and this state continued during the day. On the fourth day when the coffee was resumed, the cough disappeared. During forty-seven days the coffee was persisted in, when the cure was distinctly complete. The little patient was the only daughtet of M. Haquin, a master boot-maker of Argenteuil.

This case was furnishing subject of serious reflection, when Dr. Guyot met in a public conveyance M. Bouju: ex-notary of Francouville: he told him that he had been obliged to have double doors for his study, to keep out the terrible and incessant noise caused by his two children with hooping-cough.

Dr. Guyot detailed the case above narrated: and he cured both his children in four days by means of coffee. He has since tried the remedy successfully in above sixty cases. The efficacy of coffee in hooping-cough seems to show that the seat of the disease is not in the bronchial tubes or larynx—nor in their vascular or nervous network—but exclusively in the digestive organs, and especially in the pharynx and stomach. The cough and convulsive movements of the larynx are excited by a pruriginous irritation of the pharynx; which, again, probably depends on some special affection of the stomach. *London Jour. of Med., Aug.* 1849, *p.* 772.

ORGANS OF DIGESTION.

48.—CERTAIN STOMACH AND NERVOUS DISORDERS, AS CONNECTED WITH THE OXALIC DIATHESIS.—By Dr. James Begbie, Edinburgh.

There is a class of patients,—a numerous class it is,—composed chiefly of those in the prime of life, and including more males than females. They are the subjects generally of the sanguine or melancholic temperament; men unaccustomed to laborious or active exertion, usually belonging to the

upper classes, and accustomed to indulge in the good things, particularly the sweets of the table. They present themselves as sufferers from indigestion, from its mildest to some of its most aggravated forms; often with no disorder apparently, but the uneasiness arising from imperfect digestion, and languid assimilation, a sense of load at the pit of the stomach, with flatulence and palpitation some hours after a meal. Oftener, however, they have sufferings of a more severe kind, referable not to the digestive organs alone, but influencing very seriously the nervous system, and threatening the mental condition of the patient. They are usually peevish, sensitive, and irritable, or dull, desponding, and melancholic. At times full of gloomy fears and dark forebodings, they are painfully distrustful of their own powers; suspicious of some lurking disease,—especially pointing to consumption or disease of the heart, as the source of their apprehensions; and from the dread of some threatened evil, they are not unfrequently hurried to the brink of mental derangement. In the milder forms, there is in these patients the anxious countenance and the look of ill health, a loaded tongue, a dry skin, and an irritable pulse. In the more confirmed, a dingy dark complexion, perhaps a red and tender tongue, with growing emaciation, falling off of the hair, eruptions of the scaly kind, sometimes of boils or carbuncles. pain of a dull but deep-seated kind in the back and loins, hemorrhage from the bowels and bladder, incontinence of urine, and complete prostration of the virile powers.

[These symptoms, Dr. Begbie observes, are very generally connected with the oxalic diathesis, as shown by the presence of oxalate of lime in the urine. He gives the following cases as illustrations of the symptoms, and of the treatment to be adopted:]

A clergyman, aged 36, of sanguine temperament, and spare habits, studious and devoted to his profession, which he had exercised for many years in North America, applied to me at the close of October, 1845, for the relief of symptoms of stomach affection, under which he had laboured for many years. He was highly dyspeptic and nervous. and in his adopted country had been treated actively for "bile" and "liver," and had undergone, by different hands, a variety of prescriptions, from the mild anti-bilious pill to the large and salivationg doses of mercury, with only one effect,—the aggravation of his sufferings. After long trial, and many disappointments, he was forced to relinquish his calling, and return to Scotland, in shattered health and broken spirits. On his arrival, at the date referred to, he was pale and emaciated, and indications of mental and bodily suffering were discernable in his countenance and manner. His appetite was depraved, and he ate largely. He suffered from flatulent distension, and irregular beating of the heart: from languor and lowness of spirits; from restless nights and troubled dreams; from unrefreshing sleep, and anxious awakings. He was incapable in mental application, and had well nigh abandoned the hope of restoration to his duties, and to health. His skin was dry and parched; his tongue loaded; his bowels irregular, and the dejections unhealthy. His urine, which hitherto had not been examined, was of a deep amber colour, and perfectly transparent, possessing a peculiarly rich smell, and a sp. gr. of 1·028. It was of acid reaction, slightly phosphatic. and contained urea in excess. Under the microscope, which alone can determine satisfactorily the presence of the oxalate of lime, a large number of the characteristic crystals of that deposit were discovered, and the treatment pursued was in accordance with the principles and practice maintained by Dr. Prout, in the management of that diathesis. The bowels were cleared by repeated doses of gentle laxatives; the diet was regulated so as to exclude, as much as possible, all saccharine materials,—and milk, farinaceous vegetables. and animal food in small quantity, enjoined. Tepid sponging and warm clothing were also recommended, and the nitro-muriatic acid in doses of twenty drops twice or thrice a day, prescribed. I

have generally adhered to the following formula, omitting occasionally the syrup and increasing the water:

℞. Acid. nitric. dil.; acid. muriatic. dil.; syrup. aurant. aa ℥ss.; aquæ ℥iss. Misce.

Sig.—A tea-spoonful, mixed in a wine-glassful of water, before meals.

On the 25th of November, nearly four weeks from the commencement of this mode of treatment, the urine was again examined and found of sp. gr. 1.024, while it maintained the former characters, both under the eye, in glass vessels, and under the microscope. The general appearance of the patient, however, was somewhat improved, and the dyspeptic and nervous symptoms were less distressing. A steady perseverance in the same mode of treatment was enjoined. On the 18th December, the urine was of a straw colour; of acid reaction, of sp. gr. 1.024; unaltered by heat or nitric acid, and presenting under the microscope fewer crystals of the oxolate of lime, together with some of those of lithic acid. The symptoms in general were mitigated; but as the patient complained of gastralgia, and the urine was more decidedly acid. the former prescription was intermitted, and ten grains of the white bismuth ordered to be taken three times a day; and the same attention to diet, regimen, bathing, and clothing, as heretofore, continued. In the beginning of January the nitro-muriatic acid was resumed. On the 31st the urine brought for examination contained a considerable deposit of the lithate of ammonia, and readily cleared on the application of heat. It was still of high specific gravity, 1.025, and of acid reaction: while under the microscope the crystals of the oxolate of lime were fewer in number, and less in size. The nitro-muriatic acid was again suspended. Digestion being now performed with less uneasiness, and the general appearance of the patient improved, while his nervous symptoms were much abated, he was allowed, at his own request, to occupy the pulpit of a brother minister from time to time; and finding that he could satisfactorily discharge such duties, his spirits and health corresponding advanced.

A gentleman, aged 35, attached to no profession, accustomed to regular exercise, and rather luxurious in his habits; of sanguine temperament and strumous habit; about the beginning of 1844, according to his own account, began to complain of indigestion, characterized by loss of appetite and strength, by frequent perspirations over the forehead, on making slight muscular exertions, and by increasing emaciation. A papular eruption appeared on the chest and between the shoulders, and continued more or less for eighteen months. This was accompanied by an uneasy sense of weight at the pit of the stomach, loaded tongue, restless unrefreshing sleep, and great anxiety of mind. At this time he left Edinburgh, with the view of a permanent residence in the north of England, and in the hope of the enjoyment of better health. He was, however, disappointed, and after a trial of five months of the climate and practitioners of the south, he returned to his former home, depressed in mind and wasted in body. I saw him towards the end of Oct., 1845, a miserable dyspeptic, and hypochondriac: suffering from headache, flatulence, and palpitation; from constant restlessness of mind, and painful anxiety regarding the future; ever desirous of change, but never attaining the desired haven. He was particularly suspicious of the presence of consumption, or disease of the heart. His tongue was furred; his bowels constipated; the evacuations discoloured, and frequently mixed with blood. He complained of pain in the region of the liver, and of numbness of the right arm. His skin was dry and parched, his eyes suffused and painful, and his hair falling out. He complained of a "lanky feeling" about the loins and abdomen, of uneasiness in the region of the bladder, and of the loss of all sexual desire. His urine, at this time, was of high amber colour, and of sp. gr. 1.040; of acid reaction, and with excess of urea. Under the microscope there were large numbers of the octohedral crystals of the oxalate of lime and much epithelial matter. He was ordered

repeated doses of castor oil, a simple diet of farinaceous food, warm clothing, tepid sponging of the skin, and the nitro-muriatic acid. On the 25th of November, the urine was of sp. gr. 1.036, and still loaded with numerous crystals of the oxalate of lime. The general symptoms had undergone little change. On the 18th of December the urine was loaded with the lithate of ammonia, and the crystals of the oxalate of lime were less numerous, the sp. gr. was 1.030: the dyspeptic and nervous symptoms were less severe. He was ordered to intermit the acids, and to use an infusion of snake root, with small doses of the carbonate of potass. On the 8th of January, 1846, the crystalline deposit, as seen under the microscope, was still undiminished, and was mixed with a few crystals of lithic acid. There was little amendment in the general symptoms. The snake root was intermitted, and the nitro-muriatic acid resumed. On the 22nd of February, the oxalate of lime had considerably diminished, and the lithic acid increased, the bowels were more easily managed, the tongue had improved, and the dyspeptic and nervous symptoms were less urgent. He was ordered to alternate monthly, the use of the acids and the vegetable infusion. He was ordered to persevere, and on the occurrence of warm weather, to seek the country, and country sports. On August 3rd the sp. gr. of the urine was 1.026, it was of straw colour, and contained numerous crystals of lithic acid, and a few only of oxalate of lime. The acid was intermitted for two months. On the 12th of November the lithic acid had disappeared, but the octohedral crystals were present in considerable numbers and of large size. The acid was resumed. During November and December, the oxalate diminished in number and size, the patient gradually improved in looks and spirits; he regained his lost powers; his skin became soft and smooth; the blood disappeared from his stools; his manner and conduct indicated that he no longer thought *only* of himself and his ailments, and in the course of a few more months, under the cod liver oil, he regained his lost flesh, and acquired new health. He has long since ceased his attendance on me, but I have frequent opportunities of observing his studious observance of those rules of diet, regimen, and exercise, which I hope will exempt him from the perils and sufferings of the oxalic diathesis.

It has been alleged, and I apprehend that the opinion is very generally entertained, that the deposit in the urine of the oxalate of lime is of rare occurrence, and that the morbid condition of the blood in which it originates cannot be considered as identified with the ordinary forms of indigestion. On the contrary, I am clearly of opinion, that the deposit in question is of very frequent appearance, and that its continuance in the urine marks a peculiar diathesis which must have resulted from a mal-assimilation, characterised by more or less of that train of symptoms detailed in the foregoing histories. These cases occurred to me in practice along with several others, all within a short period of each other; and taking a retrospective view of the sufferers from stomach and nervous complaints by whom I have been consulted during the last five years, I find that the large proportion of them have been the subjects of the oxalic diathesis; and that the dyspeptic and hypochondriac symptoms have yielded and disappeared, just in proportion to the diminution and retirement of the oxalate of lime in the urine. The indigestion and mal-assimilation which result in the *lithic acid diathesis*, and which are exemplified in gout and rheumatism, in febrile and inflammatory ailments, are, no doubt, of more frequent occurrence, but it is camparitively seldom that we have to deal with these as a form of dyspepsia, the primary disorder being generally overlooked in the more pressing urgency of other symptoms which follow in its train. The symptoms, again, which denote the *phosphatic diathesis*, though generally regarded as belonging to indigestion, are by no means so marked, or so common as those connected with the oxalic poison, and are characterised by more serious disorder of the brain and spinal marrow. Many of the most obstinate and severe headaches which we are called to treat in young women, and in those of a certain age,

and which are usually regarded as nervous and dyspeptic, are dependen this diathesis, and yield only to a plan of treatment by which the mal similation is corrected, the blood purified, and the earthy salts removed f the urine. *Monthly Jour., Aug. 1849, p. 9*

47.—TREATMENT OF TROPICAL DYSENTERY BY ENEMATA OF TE WATER.—By E. Hare, Esq., 7th Bengal Irregular Cavalry.

[Mr. Hare states, that having followed the mode of treatment here scribed, with marked success for five years, he was induced to make it kno to his medical brethren in India, and has found that the results of their perience in its use are confirmatory of his own. He says:]

Dr. Annesley's description of dysentery is as follows:—

"The view we have given of disorders, which depend on accumulatio of morbid secretions and local matters in the cavity of the larger bowe shows in a remarkable manner, one of the very earliest stages of dysente Collections of excrementitious matters tend very evidently to *irritate* a inflame the mucous surface on which they lodge, and cause ulcerati and even sphacelation in a very short period if neglected, or injudicious treated. In a great many cases, dysentery is preceded by costive bowe often of long duration. In a few instances, when the evacuations are c pious, the diarrhœa subsides, and the patient escapes, at least for that tim a true dysenteric attack. This result seems to arise from the irritation pr duced in the bowels by the fæcal accumulations having subsided, in cons quence of the irritating matters having been removed. Frequently t dysenteric symptoms are present from the first, the stools being scant and streaked with blood, and with abdominal pain and tenesmus. In cas of this nature, the increased action of the muscular coats of the bowel, t which may be added the swollen state of the mucous membrane, especiall about the sigmoid flexure and rectum, prevents the passage of the fæc collections through their canal, and in many cases occasions complete ob struction, little passing away, but the perfect fluid secretions. In cases o this description, if the disease be not early subdued by very decided treat ment, sloughing of the mucous coat take place, followed by involuntary mo tions, when the fæcal accumulations at last come away, such parts of them at least as have been dissolved, being washed off by the watery secretion poured from the irritated vessels of the inflamed surface."

This is the result of Dr. Annesley's large experience, and in most expres sive language he shows the fatal effects of accumulations of fæces and acrid secretions in dysentery, and that the danger of this disease arises solely from their retention. This is corroborated by Dr. Gregory, Bampfield, and a host of others in equally large practice.

[Mr. Hare says that every writer on the subject of dysentery with the ex ception only of Dr. Raleigh, is of the same opinion. He gives the following account of a case by Dr. Annesley:]

"At first, purgatives brought away large fæculent stools; but watery evacuations continuing, Dr. A. supposed that there was still lodgment of of fæculent matter somewhere in the intestines, and that the watery evacu ations were the effect of the irritation caused by its acrid qualities. Large doses of purgatives were therefore continued for several days, but no fæces came away. On his death, the small intestines were found loaded with fæcu lent matter. The purgatives had brought copiously away at first the fæces from the large intestines, so that, before this evacuation, the man's abdo men was crammed with fæces, both large and small intestines."

Can there be a mistake here? And this was in India. But why multi ply similar examples which may be found, not assertions, but *facts, cases*, in every writer on dysentery, from Galen till now. I cannot account for Dr. Raleigh's assertion, and it is vain to try; but I think, that where the accu-

mulations are not very large, it is probable that nature herself, by throwing out fluid secretions, softens down and evacuates them; but in doing this, the gut is ulcerated and destroyed, though on dissection it is found empty. Dr. Annesley says:—

The reason why scybala and solid fæces are seldom found in East Indian dysentery, is that the solid serous fluid copiously secreted from the irritated intestine washes it, squeezed, as it were, through the constricted canal in a liquid form."

These views, as to the retention of the excremental matter in dysentery, are elucidated and confirmed by the case of Dr. James Johnson, in Calcutta. Nothing relieved the symptoms till the calomel he took procured a copious *feculent* bilious stool, succeeded, he says, "by such delightful feelings, that I prayed aloud." How then can Raleigh assert, that solid fæcal matters are *never* found in the acute dysentery of this country? I suspect, that in almost all that die, the efforts of nature have already softened and carried off in fluid the solid matters, and that Dr. R would have got rid of these in the solid form, and saved often the lives of his patients had he given purgatives more freely than he did; for he gives very small doses compared with others. If dysentery attack a man with costive bowels, (and one-third of the Europeans in this country have very costive bowels), there must be fæcal matter, and very often scybala in the intestines, which from the nature of dysentery, cannot be expelled without nature's most painful efforts. I do not assert that dysentery is caused by accumulations; I think it rarely is. But when caused, the fæces it finds in the intestine, and the irritating secretions it afterwards adds, are the principal, perhaps *only* cause of its destructive termination, and I have no doubt that the danger of dysentery is essentially caused by the long contact of fæces and acrid secretions with the inflamed surface of the intestine; and if these be freely removed, the danger at once ceases.

No author except Raleigh says that solid fæces are never found; and any one that doubts that they are not almost *always* found, and in large quantity too, had better consult Annesley's plates of dysentery, which are not selected to illustrate my theory. He will find them *all*, and without exception, plates of fæcal accumulations, sometimes in large lumps here and there. Sometimes the intestine is so crammed, that the horizontal colon is bent by its own weight, down from the stomach to the region of bladder.

I have shown that all writers on dysentery tried their best to empty the bowels by purgatives, as the one grand object in its treatment; for, this not accomplished, vain are their efforts to subdue the inflammation. Suppose an eye inflamed from cold or otherwise, put a lump of dysenteric fæces within the lid, and shut it up there, do you think that any bleeding, or 20 grain doses of calomel will prevent ulceration of the coats? This may be a coarse argument, but it is true, till it can be proved that one part of the great mucous membrane, continued in one piece from the eye to the anus, differs anywhere in its nature. What would you do in such a case? why, wash out the filth first, and then the inflammation will subside of itself, or with very moderate depletion.

[The treatment advocated by Mr. Hare in acute dysentery, is, then, the injection of warm water by means of an elastic tube passed above the sigmoid flexure, as recommended some years ago, for other diseases as well as dysentery by Dr. O'Beirne. Mr. Hare says:]

By passing the elastic tube above the sigmoid flexure, you can inject from four to six pints, and thoroughly wash out the intestine from cæcum to anus.

It is satisfactorily proved in the work of Dr. O'Beirne, that the chief obstruction to the fæces always is in the sigmoid flexure, the rectum and itself remaining almost empty both in health and disease. The fæces accumulate, therefore above the sigmoid flexure, the twistings of which, narrowed

as it is in dysentery by spasm, and the swollen state of the mucous membrane, form so complete an obstruction, that nothing but fluid, and that with difficulty, can pass. The accumulation itself, too, greatly increases its own obstruction by impeding the circulation of the mucous membrane below it, almost to strangulation, and causing sometimes so much swelling, that the mucous membrane protrudes through the anus, causing prolapsus. Now, Bampfield and Annesley, with their syringe, had no means of injecting more than the rectum, and a little, perhaps of the sigmoid flexure; but they could never reach, through the obstructed sigmoid, the fæces beyond. The irritable rectum, too, on the slightest distension, contracts on and expels the injection. Even in health, if a small quantity of fæces pass into the rectum, it produces an instant desire to stool; but large quantities may accumulate for weeks above it without causing this sensation.

If, then, a tube can be passed directly into the fæcal mass, above the sigmoid flexure, this feeling, on injecting, will not be immediately felt, and the water, by the pumping action, being intimately mixed with the fæces, it is evident that the injection cannot return without fæcal matter with it. It is astonishing how readily a hard mass of fæces will soften and break down in water. Any one may prove this for himself without much trouble. The tube, too, can be moved up and down, and the water made to wash its way, at all points of the descending colon. By the first injection, some fæcal matter, at least, will be softened and removed, and the injection can be applied again and again, till the relieved intestine eject itself the harder matters, reduced, as they must be, in size, if any remain; and this, in fact, is the way in which purgatives evacuate the fæces in dysentery, having first reduced them to a soft or watery consistence by the fluid secretions they elicit from the intestines; but what increased irritation must they cause in doing this.

Chronic Dysentery.—If injections are valuable in acute, still more are they in chronic dysentery. This disease Annesley describes in the following terms:—"The inflammation of the acute stage leaves the villous coat of the colon throughout hypertrophied. Its papillæ having an erect rough appearance and feel, of a dark red or purplish hue, with here and there livid patches of congestion, particularly at the caput coli, and transverse arch, where ulcers are often found. The sigmoid flexure is often very much contracted, its villous coat of unnatural thickness, and inflamed as well as the rectum. The lining membrane of the small bowels for some way up, is in much the same state, ash-coloured ulcers, &c. &c."

Now, I ask, is this a condition of the intestine likely to be improved by the irritation of purgatives, and yet the contraction of the colon, particularly the sigmoid flexure, together with the loss of muscular power and peristaltic action, necessarily succeeding the acute stage of the inflammation, render it absolutely necessary that they, or some substitute, should be given. The secretions, too, continue acrid, the appetite is often ravenous, while the powers of digestion are much weakened. The half-digested food and acrid secretions accumulate and distend the intestine above the contractions of the colon, causing dreadful irritation, and constant purging of fluid matters. Purgatives have, therefore, at all times been unwillingly resorted to, as a necessary evil; every writer inculcating in theory the use of the mildest laxatives, but in practice, in their *cases*, using from necessity calomel, epsom salts, black draughts, and compound jalap powder. To correct these, they used freely opiates and astringents, which, in checking the dangerous symptoms of the purging, produce accumulations. The accumulations require again purgatives; and so on the changes are rung, till the patient dies, or escapes only by the powers of a strong constitution; which, nevertheless, is often weakened, if not destroyed, by the previous treatment, for the acute stage.

See how dissatisfied Bampfield is under this destiny:—"It must be granted that astringents display great powers over the morbidly secreting

vessels; but it must also be admitted, that if they induce constipation, the morbid secretions are much increased, and it becomes necessary to abandon them. If the constipating effects of these astringents could be generally obviated, by the combination of a defined quantity of any purgative medicine, which would not decrease their astringent effects on the morbidly acting vessels, then it would appear, that the desideratum for the cure of this disease would be obtained."

Since 1822 Dr. O'Beirne has discovered this desideratum; yet no one has thought of making use of the method, though it is infinitely preferable to this half purgative half astringent system, proposed here by Bampfield (if it were possible, which it is not.) By the introduction of the elastic tube, you may wash out daily, with the most soothing applications, warm water, or milk and water, the excoriated intestine, removing its acrid secretions, and the fermenting, half digested fæces, fomenting its tender surface the meanwhile, and softly stretching the strictured parts, with the gentle expansion of water. And when in the intestine, thus daily cleansed and soothed, the inflammation and irritation have been calmed, what numerous applications may be conveyed by the tube to the whole diseased surface of the colon, from the cœcum to the anus, gently to constringe the overstrained vessels, and heal the ulcers, the suggestion of the effect of these medicines, in disease of the mucous membrane of the eye, will be sufficient proof.

No constipation can be caused in this method of injecting, or even by giving these astringent medicines by the mouth, for the fæces ought to be daily removed by a large injection of water, previously to the exhibition of the small astringent injection, or astringent medicine by mouth, and great care ought to be taken, that a sufficiently large injection be daily thrown up to empty the bowels completely.

[The proper quantity of injection is three or four pints, though Mr. Hare observes, the living intestine would hold a much larger quantity. Mr. H. proceeds to say:]

The astringent injections I have found most useful, have been nitrate of silver, fifteen grains, dissolved in two and a-half to three pints of water, a strong decoction of bark, and a mixture of catechu and chalk. The first and last I have found particularly useful. No doubt the nitrate of silver might be increased much in strength, but I have not been able yet to ascertain how much, from a dislike to try dangerous experiments without extreme caution. It is absolutely necessary to clear out the bowels first with a large injection, before injecting the medicinal one, which may be smaller.

I believe that inflammation of the mucous membrane of the colon ought to be treated on exactly the same principles as in the conjunctiva, where salivation is now rarely trusted to, but great use made of astringent lotions, with moderate depletion, and great attention to cleanliness, frequently washing away secretions by warm water or some mild lotion.

Free venesection will often be required in acute dysentery, and leeches in chronic, but very seldom, I think, mercury, though even this might be used as an ointment. It may be as well to observe, too, that it is by no means necessary, in all cases, to introduce the elastic tube far up the intestine; though really the inconvenience to the patient attending it, even in the worst cases, is so trifling, as to make it almost a matter of indifference, if carefully done. After the first clearing of the intestine, a small distance, four or five inches, will suffice, and, latterly, the common short rectum pipe, but the pump is indispensible; the common squirt will not do; and it is most requisite always to inject a full quantity, or we may fancy the intestine empty when it is not. A gentle mulling of the abdomen with the hand, while the injection is still in the bowels, assist it greatly in bringing away the accumulations. I generally keep the patient on his back, occasionally turning him to the left side. When he complains of and I see that there is, distension of the abdomen, I cease to inject, and commence, if he

can bear it, gentle mulling. The patient then sits up, and the injection never fails to carry all away with it.

The substance, then, of the whole argument is this. The long tube changes a huge internal abscess into an external, and enables us to wash out and cleanse from it its putrid contents. It also enables us to foment and soothe, by *local* applications, the slouging and ulceration these contents have caused on its surface. If any one can deny the utility of these means, I confess I cannot understand him. The consideration, too, that this abscess is in a vital organ, quickly prone to ulceration and sloughing, and moreover that its *function* is absorption, and therefore that it will rapidly absorb its own putrid contents, adds doubly to the force of the argument.

On those who may in future try this system, I would strongly urge, not to mix the old treatment with it, and dose their patients with calomel and purgatives which are directly opposed to it, and not to be led away by false theories of hydropathy and absorption of water, which are utterly without the shadow of probability, and to give the injections without limit in quantity but the patient's endurance. You cannot injure a piece of dead intestine by distending it with water, much less the living, which quickly contracts powerfully on its contents; and do not cease repeating the injection till you are satisfied that the colon is evacuated and cleansed.

Edinburgh Med. and Surg. Jour., July 1849, p. 26.

48.—USES OF SUB-NITRATE OF BISMUTH IN GASTRO-INTESTINAL AFFECTIONS.—By M. Monneret.

M. Monneret states that he has been for some years engaged in experimenting upon the medicinal qualities of this substance, and he finds that, given in far larger doses than are supposed to be permissable, it is of the greatest value in gastro-intestinal affections, especially those attended with fluxes.

Simple Diarrhœa.—It is especially in the diarrhœa of infants, resulting from imperfect lactation, that he has found it so very useful, large doses curing such in a few days. So, too, after weaning, and the injudicious diet so often adopted, the bismuth, in doses of three tea-spoonfuls a-day, soon removes all symptoms of disordered digestion, especially the serious diarrhœa so often produced in these cases. Simple diarrhœa is of much rarer occurrence in the adult; still, examples are met with in which we cannot attribute it to either phlegmasia or ulceration of the intestines, as in the granular disease of the kidneys, in chlorotic women, in women become anemic from cancerous degeneration of the uterus, and in some cases of chronic disease of the heart, or in commencing phthisis. Those cases in which the diarrhœa is serious, and results from an atonic state of the gastro-intestinal membranes, best yield to this medicine. It should be given in gradually increasing quantities from two drachms to twelve or more daily.

Diarrhœa Symptomatic of Intestinal Lesion.—In spite of the presence of symptoms indicative of inflammatory action, the author has frequently administered the bismuth to children with great success. So, too, he has found it very useful in some subjects of phthisis suffering from obstinate colliquative diarrhœa, and even in the diarrhœa of typhoid fever, when the intestinal canal was certainly the seat of very numerous ulcerations. In this last case its utility is not very permanent; but it has the advantage of inducing the tolerance of articles of diet or medicine, which without it would be rejected.

Choleriné.—The frequency with which gastro-intestinal disturbance precedes true cholera is well known, and the desirability of its suppression is evident; and to this end large doses of bismuth succeed better than any other means. It is most suitable in the cases in which with the diarrhœa there are nausea, vomiting, gastralgia, colicky pains, borborygmi, and

anorexia. The cases are innumerable in which the author has been enabled rapidly to relieve these symptoms, without any aid from opium, by giving eight or ten drachms daily. The only inconvenience resulting is a certain amount of constipation.

Gastralgia.—Various observers have already admitted the great utility of this substance, both in idiopathic gastralgia and in the forms dependent upon hysteria, hypochondriasis, chlorosis, &c., &c., but it has frequently failed in the hands of others, by being given in doses of two or three scruples daily, in place of twelve or fifteen drachms: and it is taken with such ease, that the patients voluntarily continue its employment after the pain has ceased, until the gastro-intestinal functions are thoroughly re-established. The idiopathic forms of gastralgia, so often met with in sedentary or literary persons, and in those suffering from depressing emotions, or from abuse of alchohol or coffee, are those which are most successfully combated. It has often, too, enabled the stomach to bear those tonic aliments, whose slow and painful digestion accompanied by cephalalgia, drowsiness, and pain in the back and limbs, is so often observed in chloro-anemic patients. This medicine only produces a temporary relief in gastralgia, dependent upon organic disease of the stomach, except when this viscus secretes a a large quantity of acid fluid.

Vomiting.—Vomiting may depend upon a simple gastric neurosis, and then the bismuth can be very usefully employed. It is also useful in the vomiting of pregnancy, and that accompanying dysmenorrhœa; but its efficacy is less certain than in affections of the gastro-intestinal tube, and is never so great as when diarrhœa, colic, and flatus are present. From whatever cause pain manifests itself during digestion, we may relieve it by mixing the sub-nitrate freely with the articles of food.

Administration and Action.—It should be given in powder, and best so with the first spoonful of broth or gruel. It excites no disgust, especially if placed between two bits of bread, soaked in broth. Children take it readily with milk or ptisans. The author has never given less than from two to three drachms daily, nor more than twenty, and he has never observed the slightest inconvenience from these large doses; and it is his custom to give it to the children in his hospital by spoonfuls or table spoonfuls, without observing more exactitude, so innocuous is it. So imperfectly is this fact known that the chemists hesitate in preparing his prescriptions in which these large doses are ordered.

The author cannot conceive why this substance was ever set down as an irritant poison, as he has never found the slightest irritation from the largest doses given to either the healthy or the sick; and post-mortem examination proves that, beyond patches of black discoloration, it produces no effect on the mucous membrane, the consistence of this remaining quite normal. The action of the substance on the canal seems to be quite negative—that is to say, the abnormal symptoms for which it was prescribed quickly disappear. Great attention has failed also to detect any marked effect upon any other part of the system. Perhaps the urine is somewhat increased, and the pulse becomes slower; this is probably due to the relief of the gastro-intestinal affection. The action of bismuth is, then, purely a *local* one; and this local action, so far from being an irritant one, as so commonly stated, diminishes the activity of the phenomena of which the mucous membrane is the seat.—*Gaz. Med.* 15, 16; and *Med. Chir. Rev.*, July, 1849. *Monthly Retrospect, Sept.* 1849, *p.* 184.

49.—USE OF CREASOTE IN SALIVATION.—By. Dr. Faulcon.

Dr. Faulcon relates a case of profuse mercurial salivation, in which, after the unsuccessful employment of the usual remedies, he employed with great advantage a gargle composed of creosote 3½, sage tea a pint, the affection quickly yielding.—*Phil. Med. Ex.*, No. 47.

British and Foreign Medico-Chirurgical Review, Oct. 1849, *p.* 864.

URINARY ORGANS.

50.—"BRIGHT'S DISEASE OF THE KIDNEYS," ESSENTIALLY AND PRIMARILY A BLOOD-DISEASE.—By Prof. Walshe, University College.

[Prof. Walshe observes that the natural history of "Bright's Disease," affords tolerably sure evidence that it is not primarily a local affection, but originates in the blood. The following are some of the principal facts which support such an opinion:]

1. There is no positive and constant naked-eye peculiarity, in the anatomical conditions of the kidney, in all cases where there had been discharge of albuminous urine, and cellular dropsy during life. So true is this that the most practised observers would hesitate, (and have actually hesitated,) from the inspection of *certain* kidneys, to say whether the case had, during life, been attended with the symptoms of simple chronic nephritis, or of "Bright's disease." Of course, this difficulty of distinction is not common, but it exists with quite sufficient frequency to justify the general proposition, as just stated.

2. Neither is there any microscopic character, always present, positively and unfailingly distinctive between the kidneys of persons who have suffered from simple chronic nephritis, or from "Bright's disease." We have frequently, in this hospital, seen clogging of the tubules with simple exudation, (in the stage of "induration-matter,") in victims of the latter disease; whilst in others, whose urine had been non-albuminous and alkaline, and in whom no secondary diseases existed, (simple chronic nephritis,) fat existed, in some abundance, along with the same "induration matter."

3. There is no positive and direct relationship, in cases of "Bright's disease, between the amount of albuminous impregnation of the urine and of renal disorganization.

4. There is no positive and direct relationship between the number and severity of the "secondary diseases," and of renal disorganization.

5. The urine may, in "Bright's disease," be occasionally copiously albuminous, without co-existing dropsy; or the patient may be dropsical, while his urine is free from albumen.

6. Albuminous impregnation of the urine is caused by other forms of renal disease proper, besides those met with in "Bright's disease," and also by certain morbid states of the blood.

7. Albumen may totally disappear from the urine, *pro tempore*, in the most serious cases of "Bright's disease," yet it cannot be supposed that the physical conditions of the kidney, favouring filtration of serum through the vessels, have suddenly and completely changed.

8. The reason why there is greater clogging of the tubules (general, or limited and "granular,") in the advanced stages of "Bright's disease," (with proto-plastic, or fatty matter, or both,) is, that longer time has been allowed for the morbid blood-elements to filtrate through the walls of the vessels. These elements, in part stagnating within the tubules, in part exuded amid the intertubular tissue, accumulate in the renal texture, instead of all passing away with the urine. These elements, deposited granularly, and by uniform infiltration, are the *effects* of the disease, not its *cause*. But as the alterations of the blood are not equable and uniform in their advancement, there is no direct ratio between the amount of clogging of the tubules, &c. and the severity of the disease, considered in the sum of its general manifestations. So true is this, that (as is clinically well known) the very highest amount of "secondary affections" may exist at the outset (anatomically considered) of the disease of the kidney.

9. From the very outset of "Bright's disease," the existence of blood-changes is certain; they are more marked in degree, and earlier in development (as appreciable conditions) than in any recognised chronic blood diseases.

10. "Bright's disease" has several of the characters of a primary chronic blood-disease. Thus: there is no direct ratio between the anatomical changes and the mass of morbid condition constituting the disease;—"Bright's disease" tends to the production of various secondary and dependent affections; and the character of these secondary affections partakes of that of the primary (that is, primary in the train of organic changes of the solids) renal changes; they too are marked by transudations of serum, and deposition of proto-plastic matter and fat.

11. It may be said, that as urea has been found in the blood at the commencement of acute attacks of "Bright's disease," there is evidence of organic disease of the kidney *ab initio*. But no; functional inactivity is enough to ensure accumulation of urea in the blood; in cholera, there is no textural alteration of the renal substance. The true explanation seems to be, that the state of the blood prevents the kidney from acting properly on the elements it is accustomed to excrete, not that its own functional aptitude is at the outset seriously impaired; in other words it is probable that at the commencement the renal cells are still quite able to separate urea, if healthily-constituted blood were offered to them by the vessels. This view is, doubtless, hypothetical; but it harmonizes with the well-known and striking fact, that urea may, and does, not uncommonly, disappear from the blood when the anatomical changes in the kidney are carried to extremes, and the case (though a temporary improvement has occurred) is fast tending to a fatal issue. According to the doctrine which regards the accumulation of urea in the blood as the consequence solely of the changes in the kidney, how is this to be explained? According to this doctrine, the effect of a certain cause is decreased as the intensity of that cause is increased.

12. With the progress of deposition within the kidney, the excretory functions of the organ, become, partly mechanically, partly dynamically, interfered with, and hence the blood becomes *secondarily* diseased also.

13. It may be objected that if "Bright's disease" be not essentially a renal, but a blood-disease, *ab initio*, it does not seem clear why the kidney should be the organ on which textural changes are earliest and constantly inflicted. The objection is valueless, until it be explained why tubercle selects the bronchial glands at one period of life for its main nidus, the lungs at another; why cancer chiefly infests the mamma and uterus, &c. *As soon as* the predilections of blood-diseases for certain organs (or the attracting quality of certain organs for special diseased circulating elements) are explained in the instances *inter alia* of tubercle and cancer, the attraction of the morbid material, present in the blood in "Bright's disease," for the kidney will probably be found simple enough. Meanwhile, I would observe, that a fact, which may not be without its application in this matter, was ascertained some years ago by Simon, from the comparative analysis of the blood of the aorta, and of the renal veins in a horse. The quantity of albumen in the former to that in the latter was found to be as 425:446. This natural tendency to excess of albumen in the blood of the renal veins may, perhaps, be in some way connected with its tendency to escape by the channel of the kidney in "Bright's disease." The urine, (according to some chemists) naturally contains albumen, but in a proportion so minute that it is undiscoverable by ordinary tests.

From these facts and arguments it appears to me that the following conclusions may fairly be drawn:—

"That "Bright's disease" is a blood-disease, *ab initio*, essentially tending to chronicity, though (like cancer and phthisis) sometimes running an acute course. That the existence of that *ab initio* change follows from—1. Direct analysis. 2. The general accordance of the pathology of the disease with that of chronic blood-diseases. 3. The inadequacy of the local renal states to account for the local renal phenomena, still less for the general phenomena. 4. The total want of harmony between the renal changes

and the general implication of the system, and between the renal changes and the local functional disorders. 5. The facility with which that want of harmony is explicable on the hypothesis of blood-disease. That the precise nature of the primary blood-change is unknown: at present the main peculiarities ascertained (excess of serum of low specific gravity, excess of fat, excess of urea, and deficiency of albumen) are, in all probability, secondary. That the renal textural changes are not the *cause* of the sum of morbid states, included under the name of "Bright's disease;" and that they do not even furnish a *measure of the intensity* of that disease. That in reality the renal textural changes form at the most the *anatomical character* of the disease, (and their claim in this respect even is not yet fully made out under all circumstances, *vide* propositions 1 and 2,) just as tuberculous deposit in the lung constitutes the anatomical character of phthisis. That the primary blood-changes are the result, probably, of error in the primary and secondary digestion processes. The toxic condition of the blood, whatever it is, is not derived from influences acting from without, but generated within the frame through imperfect organic actions.

That, as in all diseases of this class, (rheumatism, gout, tubercle, cancer, &c.) there is a mysterious constitutional *predisposition* to those imperfect organic actions; without this, all the exciting and immediate alleged causes of "Bright's disease" fail in the power to evolve it.

Lancet, July 14, 1849, *p.* 29.

51.—A NEW TEST FOR ALBUMEN.—By M. E. Millon.

The highly acid liquid obtained by dissolving mercury in its own weight of nitric acid, constitutes an extremely delicate reagent for albumen and albuminous compounds. This mercurial solution communicates to albuminous substances an intensely red colour, by means of which a very minute proportion of albumen in water may be detected.

To give an idea of the delicacy of this reagent, and to show its applicability to the study of vegetable organization, it may be stated that starch and gum acquire by its action a very distinct rose tint. Urine almost always becomes coloured of a rose tint after the nitro-mercurial solution has been mixed with it, and the mixture has been warmed. The albumen of the blood, that of serous effusions, of plants and fibrin, casein, gluten, legumin, silk, wool, feathers, horn, epidermis, gelatin, chondrin, and protien, are equally affected.

Protien rendered soluble by the prolonged action of an alkaline ley, or by sulphuric acid, is also coloured red, but no precipitate is thrown down.

This mercurial solution is most readily prepared by dissolving mercury in its weight of nitric acid (1-4) in the cold. When reaction has ceased, a gentle heat may be applied to facilitate the solution of metal. When the solution is complete, the liquid is to be diluted with two parts of distilled water by measure. After some hours the liquid is to be decanted from any mixed crystals of nitrite and nitrate of mercury, that may subside.

This reagent acts on albuminous substances at low temperatures, but not so completely as at a temperature of from 140° to 150° Fah. It is even preferable to continue the application of heat to the boiling point. The prolonged action of the reagent in excess does not alter the red matter, as has been ascertained by the contact of albumen with the nitro-mercurial liquid for upwards of one year.

According to M. Millon, this singular property of giving a pink or red colour to albuminous substances resides neither in the nitrate nor in the nitrite of mercury, nor in their mixture. It is necessary that there should be hyponitrous acid in the solution which contains the two salts. The pure pernitrate of mercury, saturated with hyponitrous acid, forms a delicate reagent, but inferior to that of a saturated solution of the mixed salts.

One or two drops of the test liquid are sufficient for the detection of albumen. Albumen has been detected in the liquid of cholera, when nitric acid and heat have failed to demonstrate its presence.—*Comptes Rendus.* Janvier, 1849. *Med. Gaz., Aug.* 10, 1849 *p.* 262.

52.—DIAGNOSIS OF HÆMATURIA.—By Dr. Robert Venables, A.M.

[To show the errors of diagnosis into which we may fall by trusting to a superficial examination of the urine, Dr. Venables gives an account of the examination of a specimen of urine, which presented the following characters:]

It was turbid, dark, and quite opaque. Upon standing for some hours, a dark red-looking sediment fell down to the bottom of the jar. The supernatant urine retained no particular colour, remained turbid but allowed the light to pass through. Passed through the filter, it came through of a deep and bright amber colour, and perfectly transparent. No peculiar smell. Sp. gr. 1030. Reddened litmus paper.

What was retained on the filter, examined by the microscope, presented a number of epithelial scales, somewhat coloured; some globules of mucus, and a few square tables of lithic acid.

The filtered urine examined for albumen by heat, with both nitric acid, nitro-hydrochloric acid, and prussiate of potass, gave merely a haze, but no trace of this principle. Uric acid separated in very small quantity from the acidulated urine. Solution of sesquicarbonate of ammonia threw down a large quantity of prismatic double phosphate, and also some phosphate of lime.

A portion of the dark reddish sediment, placed under the microscope, was found to consist of very minute rhombs of uric acid of rather a dark outline, agglutinated together, and intermixed with epithelium of a deep colour.

A portion collected from the filter, and ignited, left a residuum which resisted all further action of the heat, even the blow-pipe flame. This residuum, mixed with charcoal, and ignited before the blow-pipe flame, was not attracted by the magnet, and, consequently could not have contained any magnetic iron. The residuum, after ignition, boiled with nitro hydrochloric acid, filtered and diluted with water, and treated with yellow prussiate of potass, gave no appearance whatever of prussian blue. Nor did tincture of galls, or hydrosulphate of ammonia, indicate even a trace of iron. Under these circumstances, I felt warranted in denying the presence of *blood* in this urine.

This analysis was repeated three several times, with the same result; but Dr. Venables, remembering a case which had occurred to him previously, in which the urine had at first presented similar appearances to those above described, and had afterwards afforded unequivocal indications of the presence of blood, gave a guarded opinion, and directed the patient to send him another specimen of the urine. Accordingly in twelve days afterwards, Dr. Venables]

Received a second specimen of the urine passed by the same gentleman, after active exercise in walking. This was darkish and opaque, but on standing let fall a dense, dark red looking mass, leaving the supernatant urine turbid, semi-opaque, and of rather a brightish red colour. It was nearly devoid of smell; sp. gr. 1030; reddened litmus paper, and abounded, as did the former specimen, in urea, and the earthy phosphates. The presence of blood in this urine was most fully proved by the following evidence:—

A portion of the sediment placed under the microscope clearly showed the blood discs. The urine thrown on the filter, though of the brightish red above described, came through of a light amber colour, without any appearance of red.

A small portion of the matter retained by the filter, collected, transferred to the slide, and placed under the microscope, showed the blood corpuscles, thus proving that the reddish colour of the supernatant urine depended upon the mechanical suspension or intermixture of the red particles.

A portion of the dark red sediment collected and ignited before the blow-pipe, with charcoal, became magnetic, being strongly attracted by the magnet. Another portion ignited; the residue after ignition was boiled with nitro-hydro-chloric acid. The solution diluted with distilled water, and passed through the filter, gave, with the usual tests, distinct and unequivocal evidence of the presence of iron; for instance, with yellow prussiate of potass it formed Prussian blue; tincture of galls threw down the black precipitate; and hydro-sulphate of ammonia threw down sulphuret of iron; free sulphur being precipitated, when hydro-sulphuric acid alone was used..

Assuming, from the above, that in the two cases, the particulars of which have just been stated, that a peculiar condition of the urine—*apparently* but not *really*, sanguineous—preceded actual hæmaturia, it may be matter for future inquiry whether such a condition is necessarily a precursor of bloody urine, or whether it be a precursor only of some particular form or forms? Then the question naturally arises, what peculiar hemorrhagic condition does it indicate as threatened? For myself, the opportunities of observation and forming inferences have been too limited to enable me to offer anything plausible even, much less satisfactory or conclusive. There is one result, however, of importance, the necessity of not being over hasty in deciding the nature of urinary deposits, without chemically or otherwise determining their properties.

Urine containing blood is almost necessarily albuminous; for we can hardly imagine the blood-discs escaping without the serum; and it was the non-coagulability in the first specimen of the filtered urine, and its *coagulability* and reddish colour previous to filtration in the second, which led me to believe the first to be devoid of blood; and, in the second, to infer the presence of blood and the general sanguineous character of this urine.

Another question also presents here,—the most easy and the most ready means of deciding the sanguineous character of the urinary deposits, and of the urine itself. The elements of the blood may be arranged under the three following heads: viz., the serum, an albuminous fluid not spontaneously coagulable; the liquor sanguinis, a fibrinous fluid spontaneously coagulating, in consequence of the spontaneous solidification of the fibrin; and the hæmatine, constituting the red particles. The two first may occur in the urine, as has been frequently observed after certain febrile states of system, especially scarlatina, after which coagulable urine often occurs as a sequela. But we can hardly consider any urine as bloody, unless the red particles of the blood be present; and many instances occur in which the urine, from its general *sensible* properties would be pronounced bloody. The detection, therefore, of the red particles seems essential to be able to pronounce the urine really and unquestionably sanguineous. The coagulability of the urine by heat and certain re-agents, affords, in doubtful cases, but presumptive evidence; consequently, we must look to the hæmatosine as the only certain proof of the sanguineous nature of the urine.

The microscope is much relied on for the detection of the blood discs; but, as it is liable to certain fallacies, and in some instances wholly inapplicable, from changes in the blood discs themselves,—we cannot safely depend upon it. Chemistry offers the next, and probably the most unequivocal means of detecting hæmatine. M. Pariset proposes the following:—Boil and filter the urine, when brown coagulums of albumen and hæmatosine will be retained by the filter. Pour upon these a solution of potass; a greenish fluid will pass through, if hæmatosine were present. If hydrochloric acid be added to the filtered liquor, it will precipitate coagulums of white proteine. This, however, is liable to certain fallacies, which it would

be foreign here to our purpose to discuss. It will be necessary to understand the principles of diagnostics in the previous detail, to state the chemical composition of hæmatoisine. Mulder, from his analysis deduced the following formula for hæmatoisine :—

$$N_3 \quad H_{23} \quad C_{44} \quad O_6 \quad Fe_1$$

The iron in hæmatoisine is in the ratio of 6·64 or 6·66 per cent. As iron is an essential principle in the constitution of hæmatoisine, it necessarily follows, that if blood be effused into the urine, we shall be able to discover some trace of iron; and this is the foundation of the pathological views enunciated in the preceding observations.

Various methods may be proposed for the detection of the iron; but perhaps the most simple consists in boiling the urine, and coagulating all the principles coagulable by a temperature of 212° Ft. It may next be filtered, and what is retained by the filter should be exposed for some time to a red heat in a platinum crucible or one of Berlin ware. By this means all the organic matters, and other volatile principles, will be dissipated. The residue may then be mixed with charcoal or black flux, and ignited before the blow-pipe. The iron by these means will be reduced, and rendered magnetic, that is, attractable by the magnet. We thus determine the presence of a principle capable of being rendered attractable by the magnet.

If the ignited or reduced principle be now suspended in distilled water, and a current of chlorine passed through, a chloride of iron will be found in solution, which, on exposure to the air, will pass into sesquichloride.

The ignited mass will consist of oxide of iron mixed with certain fixed salts, as phosphates, &c. From these the iron may be separated by the magnet; but this manipulation will not be necessary.

As the transmission of chlorine may be difficult to some, every object may be attained by digesting the magnetic particles, or even the entire residue in hydrochloric acid. A chloride of iron will be formed easily convertible into sesquichloride, by boiling with a small quantity of nitric acid. The sesquichloride of iron may be formed at once, by boiling with nitro-hydrochloric acid, prepared by mixing three parts of hydrochloric with one of nitric acid. The solution should be mixed with distilled water, and passed through the filter.

If the iron be in the state of protosalt, ammonia produces a white precipitate, which soon passes to bluish green. Yellow prussiate of potass, a precipitate, at first white, but which soon becomes blue. Hydrosulphuric acid has no action; but if, after passing through a current of the gas, ammonia be added, a black protosulphuret of iron precipitates. The most characteristic test is a solution of red prussiate of potass, which gives Prussian blue. This does not act on the per or sesqui-salts.

If the iron be in the state of a persalt, ammonia throws down a brownish-ish red precipitate of hydrated sesquioxide; solution of yellow prussiate of potass immediately gives rise to the formation of Prussian blue. Sulphocyanide of potassium strikes a deep blood-red colour; but there is no precipitate. Tannin, or tincture of galls, gives the solution of iron a deep violet or black colour. A current of hydrosulphuric acid is attended with the separation of a white precipitate, which is free sulphur. If to the filtered fluid ammonia be now added, the black sesquisulphuret of iron falls down. The presence of iron, even in the most minute quantity, may be thus determined; but where the quantity is exceedingly minute, the evidence of its presence will not be immediate, and will probably require several hours for its complete development.

I have been diffuse in these observations, because I think the matter as important as it is interesting, more especially as relates to diagnostics. I have no doubt that many errors, and wrong notions, as to blood in the urine, have prevailed. In some the sensible characters so closely resemble those of bloody urine, that reliance upon them alone must lead to error.

Med. Times, July 21, 1849, p. 51.

53.—SUPPRESSION OF URINE.—By Dr. J. C. Hall.

[Dr. Hall speaks first of partial, and then of complete suppression.]

1st. *Cases in which there is a partial suppression of urine.*—Such cases are very far from uncommon. A gentleman exposes himself to a cold atmosphere—for example, remains loitering about in his garden, on a cold April day; in the evening he complains of having "taken cold," and creeps to the fire; he has an attack of shivering; he retires to bed; his skin becomes hot and dry; the urine is small in quantity, and of a dark colour. This attack often continues for some days, after which, under appropriate treatment, the urine gradually becomes secreted in larger quantities, and the patient recovers his usual health, the improvement commencing with the increased secretion of urine. This I have observed so often that no doubt remains on my mind as to its correctness, and its bearing on the treatment of disease is highly important.

The recent experiments of Dr. Golding Bird throw additional light upon this subject; he shows that the kidneys remove from the blood all excess of water, together with the metamorphosed products of effete tissues, or mal-assimilated food; that these organs are in reality, the "depurators" of the system, and the teachers of the numberless chemical changes which are constantly taking place both in the healthy and diseased animal fabrics. He has come to the conclusion that from 600 to 700 grains of solid materials are daily separated by the kidneys of a person in a state of health. He has also constructed a very important table, by which, in a moment, the relation between the specific gravity of the urine and the amount of solids contained in an ounce of it may be ascertained. He says, "A glance at this table presents us with a mode of recollecting the quantity of solids existing in urine of different specific gravities, when the table is not at hand for reference—a piece of short memory of no small service in practice. Thus, if the specific gravity of any specimen of urine be expressed in four figures, the last two will indicate the quantity of the solids in a fluid ounce of the urine within an error of little more than a grain, when the density does not exceed 1.030; above that number, the error is a little greater. To illustrate this, let us suppose we have called upon a patient the integrity of the depurating functions of whose kidneys we are anxious to learn. The quantity of urine excreted, we will suppose, in twenty-four hours, amounts to three pints, or sixty ounces, and the density of the mixed specimens passed in the time alluded to is 1.020; now, we have merely to multiply the number of ounces of the urine by the last two figures of the specific gravity to learn the quantity excreted, or $60 \times 20 = 1200$ grains of solids. If the table were at hand, the calculation would then be more rigid, for we should then multiply 60 by 20.79 instead of 20; the product, 1247 grains, shows, that by the former mode an error of forty-seven grains has been committed, an amount not sufficient to interfere materially with drawing out inductions at the bed-side, and, of course, capable of immediate correction by referring to the table at our leisure." Dr. Bird also draws attention to the fact, so well known to all whose eyes have wandered over the Hippocratic writings, that there is "an obvious relation between the termination of some phases of disease and a crisis by urine." Simon says, that some physicians have pointed out, that for the most part they have observed a lateritious deposit in the urine at the period when patients begin to recover from typhus; hence the very important practical questions, at what period do these deposits take place? and is there any reason for regarding them as harbingers of a happy result? Willis and Schönlein consider that they are to be looked upon as favourable; on the other hand, Becquerel considers this deposit as affording no evidence of the result of the disease; in some of the fatal cases under his observation, a deposit was observed at various stages of the disease, and Andral has made the same remark.

This opinion does not coincide with that of Dr. Golding Bird; nor in the comparatively limited sphere of my own experience has it found materials

for confirmation. In the days of old, men observed for themselves, and truthfully, carefully, and patiently recorded the result of what they had seen. Dr. Bird is far from despising this empirical knowledge of our forefathers; but rather attaching a proper degree of importance to their bedside lore, he has been enabled by the powers of modern science, to prove that what was said by the old physicians, with regard to a crisis by the urine, is founded in fact. He gives the results of several cases of intermittent fever which were under his care in Guy's Hospital, and remarks:—

"If I can prove that, concomitantly with an enormous increase in the excretions of the kidneys, sudden improvement occurs in a patient,—which change for the better does not take place until this great change is observed,—I think it will be conceded that I shall produce sufficient evidence to show that the observations of our predecessors were correct, and that something like a critical excretion from the kidneys does take place,—at least in the diseases which have been sufficiently carefully studied in this point of view."

Another writer, whose opinion commands the greatest respect, and whose field for observation has been almost unlimited, Dr. C. J. B. Williams, remarks, that "the excretions are defective in many idiopathic and symptomatic fevers," (Mr. Palmer detected urea in the serum contained in the ventricles of the brain, in a case of fatal apoplexy from granular kidneys and diseased heart;) "and it is when the secreting organs recover their power, and a diarrhœa occurs, or a copious discharge of highly-loaded urine, that a favourable change occurs." In future papers, I shall be able to prove also, that morbid matters, which, by altogether remaining in the system, produce alarming symptoms, and speedily and in death, in a slighter degree, make up the elements of disease; and the leaves of my case-book contain the record of cases evidently the result of defective excretion, although at one time we should have been inclined to regard them in another light. We have now to consider,

2dly. *The treatment of those cases in which there is a total suppression of urine*.—It remains only to say, in conclusion, a word or two on the treatment of those singular cases to which Sir H. Halford first of all directed our attention,—in which, independent of acute disease—independent of any derangement he could discover in the structure of these organs—their secreting office was completely suspended. This constitutes the disease which Dr. Willis has named "anuria,"—said by him to terminate in coma in four or five days, and in death in a few days more. I venture to say that a fatal result, according to my experience, occurs much more quickly. In three out of the five fatal cases which came under the observation of Sir H. Halford, a very strong urinous smell was observed in the perspiration for twenty-four hours before death. The patients all, died with "symptoms of oppression of the brain."

I have little to add to what has been said already with regard to treatment. Looking at those cases of cholera which have recovered, in which suppression of urine has continued some time, I am inclined to advise, at the first, that a full dose of calomel and colocynth, with a drop of croton oil, should be made into a pill and given to the patient; this to be followed by an aperient draught of infusion of senna, sulphate of magnesia and cream of tartar. A large stimulating glyster should also be exhibited, so that the bowels may be largely purged three or four times; cupping over the loins, bleeding, if the state of the pulse admit of it; warm baths; a large blister to the loins; and full doses of powdered cantharides—a remedy which was very successful in the hands of Sir A. Cooper, and which in one case of total deprivation of urine that I have been consulted in, was most certainly followed by a re-secretion of urine, after all hope of success had been abandoned, and the recovery of the patient regarded as all but impossible.

This plan of treatment by powerful diuretics may, theoretically, appear incorrect, but, so far as we know at present, it is one that has been found, practically, the most successful. *Lancet, July* 7, 1849, *p.* 5.

54.—PRODUCTION OF SUGAR IN THE URINE BY WOUNDING THE BRAIN.—By M. Bernard.

On the 26th of March, 1849, M. Magendie announced to the French Academy a very important and entirely unexpected discovery made very recently by M. Bernard. M. B. has found that by wounding a certain part of the floor of the fourth ventricle, the composition of the urine becomes altered, and sugar makes its appearance in it.

The puncture is made by passing the instrument through the inferior orifice of the ventricle, and soon afterwards the urine of the animal (a rabbit,) which before the operation is turbid, alkaline, and free from saccharine matter, becomes abundant, clear, and contains in solution a very large quantity of sugar, and resembles that of diabetes. In general, not more than an hour and a half or two hours are requisite for the complete production of this change in the characters of the urine. The blood also contains a large amount of sugar.

The experiments have hitherto been made upon sixteen rabbits; and by varying them, M. Bernard has found that the part of the fourth ventricle which must be wounded to produce this remarkable phenomenon of the appearance of sugar in the blood and urine was very limited, and corresponded to a space situated a little above the origin of the eighth pair of nerves.

These results which are so surprising from their novelty, cannot at present be in any way explained. They merely serve to show the remarkable influence which the nervous system exerts upon the function of nutrition; and in this light they deserve the serious attention of chemists.

The experiments which have also brought to light some other interesting particulars, are being continued upon animals of different kinds, and placed under various circumstances. M. Bernard hopes soon to be able to lay the results before the Academy.—*Chem. Gaz., May* 15, 1849.

Monthly Retrospect, July, 1849, *p.* 129.

SURGERY.

FRACTURES AND DISEASES OF BONE.

55.—SYMPTOMS OF FRACTURE OF THE BASE OF THE SKULL.—By John Adams, Esq., Surgeon to the London Hospital.

[In reply to the question "What are the pathognomonic signs of fractures of the base of the skull?", Mr. Adams observes:]

Hemorrhage from the ear is generally ranked as a symptom of fractured base: this may arise from a variety of sources—thus, it may depend on rupture of the membrana tympani; it may depend on rupture of the lateral sinus, or of the carotid artery, as when an extensive fracture traverses the canal lodging this vessel: in either of the two latter instances the hemorrhage would be so profuse as to leave no doubt as to the nature of the injury. But hemorrhage from the ear is, in my opinion, not pathognomonic of this accident: it is so commonly found in slight cases of injury to the head, and in cases which occur without any untoward symptoms, and many such cases are brought to this hospital, that I feel justified in discarding it as a sign wholly to be relied on. Now, if in a case of injured head, hemorrhage from the ear has taken place, and the injury has been accom-

panied or succeeded by paralysis of the portio dura, then I should be disposed to regard these signs collectively as indicative of a fractured base; but separately and singly, although it is an important indication, I do not rely upon it as conclusive of the existence of such an accident. Take paralysis of a cerebral nerve: I believe that in many cases permanent or long continued paralysis of parts supplied by any nerve passing out of the base of the skull will afford presumptive, though not positive, evidence of the existence of fractured base: although you must understand that this may result from injury to the brain or root of the nerve irrespective of fracture.

Although hemorrhage from the ear and paralysis of nerves passing out of the base of the skull are presumptive signs of fractured base, yet they are not positive signs of this accident; and, indeed, I know only of one symptom which is strictly pathognomonic of the injury, and that is a free discharge of serum from the ear after a severe injury of the skull. This symptom, however, comes on, not immediately, but on the second or third day after the accident. I remember a case some years ago, of a man in whom a serous fluid escaped from the ear in such quantities as to soak through the pillow, and to require repeated changes of linen. A similar case is recorded in the tenth volume of the Medical Gazette, where the patient lost between four and five ounces of a similar fluid in one night; both these cases did well. In the Memoirs de la Société de Chirurgie de Paris, there is an article on this subject by M. Robert, who, from numerous dissections, has distinctly traced this phenomenon to a fracture extending across the petrous portion of the temporal bone, and a direct opening from this into the arachnoid cavity. *Med. Gaz. June 1, 1849, p. 926.*

86—MECHANICAL TREATMENT OF RICKETS.—By E. F. Lonsdale, Esq., Assistant Surgeon to the Orthopædic Hospital.

The curvatures depending upon rickets are more difficult to treat mechanically, than those arising from simple weakness, owing to the deformities being so much more severe, as well as taking such a variety of shapes. In a great number of cases the knock-knee and outward curvature of the tibia are combined; two kinds of splints, then, have to be employed—namely, the long splints outside to act upon the knees, and the short ones inside to act upon the tibia. The short ones are to be applied first and then the long ones on the outside, making the knee strap pass round the two splints, and the ankle one the same, the middle strap round the leg acting upon the short splint only: pressure upon the joints and bones continued in this manner for some time, will both straighten the knees and the bones of the leg. The inner splint may be necessary in slight cases, where there is only the indentation just above the inner ankle, to prevent the ankle strap that fixes the lower end of the long splint from slipping into the hollow so formed, and tending to increase the curvature. It need not be very wide when used for this purpose.

Little can be done for the *anterior* curvature of the tibia, for it is not only difficult to apply the pressure, but when applied it cannot be borne to an extent sufficient to act upon the deformity, owing to the skin becoming soon irritated on the sharp spine of the bone: as a general rule, however, this anterior curve diminishes as the bone elongates by growth, the projection occupying a higher position nearer to the centre of the tibia.

The mechanical treatment required for the severer forms of rachitic genu valga is the same as that recommended for the severe kind of common knock-knee—namely, the splint, with a hinge to allow it being fitted closely to the shape of the joint, the extension outwards being made by the male and female screw; the important point to attend to being to see that the knee lies flat in the splint, and that it is firmly fixed in position with a broad strap and thick pad. After the bones have been brought into

the straight position, they require to be kept so, by means of artificial support for some months, when the patient begins to walk. This support is gained by employing irons attached to the boot below, and to a pelvic hoop above, which connects the two together. Each iron has three joints, one at the hip and ankle, which are free, and one at the knee which locks with a "catch," and admits of being used at pleasure, so allowing of the joint being bent, when it may be thought proper to do so; which, however, should not be done till some time after the patient has commenced walking: the object being to let all the ligaments and muscles around the joint become accustomed to their new position, into which they have been brought by the deformity being removed. The irons should be made as light as may be consistent with strength, more particularly in young children, where the muscular system generally is weak. When the patient discontinues the use of irons, he should do so by degrees, by leaving them off for a short time every day, and so increasing the interval: the guide being, the existence or not of any inclination in the joint to fall inwards; should this exist, they must be worn constantly for some time longer.

Severe outward curvature of the tibia, when depending upon rickets, is generally accompanied with outward curvature of the femur also, throwing the knees widely apart. It is a very difficult deformity to treat even in children, owing to the inability to gain sufficient purchase on the thigh to act with any mechanical power on the curvature of the femur itself; for to straighten a bone by means of a splint and strap, a fulcrum must be gained at both ends, while the pressure is made to tell upon the centre and most curved part; and this cannot be done on the thigh, from the peculiar attachment of the head of the bone to the pelvis. The common splint, however, is the best to be employed, and should be made long enough to extend up the thigh as high as practicable: the pad of the knee must be very thick to throw the splint off from the thigh, so that the straps may have a purchase on the bone, and act upon it, if it be inclined to yield; whereas if the pads were thick on the thigh, all the straps would do would be to press the muscles against the femur, instead of tending to draw the bone towards the splint. But, as before stated, it is very difficult to act upon the thigh bone at all in these cases. Much can be done in removing the curve in the bones of the leg, which will also assist in removing that of the bone of the thigh, by bringing the weight of the body to bear more perpendicularly upon the whole limb.

Another difficulty in these cases of severe curvature of the thigh bones, when met with after the bones have become hardened, is, that any straightening that may be produced in the limb is done at the expense of the knee joint, provided the bone itself will not yield; for the articular surfaces of the bones—namely, the tibia and fibula—remain in contact notwithstanding the great degree of curvature that may exist in them. It is different in the cases of knock-knees, where the inner condyle and the inner portion of the head of the tibia may become separated to a great extent, the separation being distinctly felt by placing the finger between the two. This must be borne in mind; and it is better to leave the curvature in its original condition, rather than strain the joint to an extent to produce a weakness which the patient may never altogether get rid of. A good rule to follow in these cases of curved bones is to ascertain if the curvature is increasing; for, if so, it necessarily implies that the bone is still soft enough to yield, and if in one direction, there is no reason why it should not yield in the other, though the weight of the body may cause it to do so more than the pressure produced by the straps and splints; still, by perseverance in keeping the patient off his feet as much as possible, much may be gained.

Med. Gaz. Aug. 10, 1849, *p.* 232.

57.—TREATMENT OF FRACTURES OF THE TIBIA.—By W. ALLISON, Esq., East Redford.

[Mr. Allison states that he can strongly recommend the following plan of treating fractures of the tibia, it being that which he always adopts.]

On all occasions, much care is requisite in preparing the bed before the patient is placed upon it. Having procured a board nine or ten inches broad, and long enough to reach from the middle of the thigh (or if the leg requires raising, from the ham,) to some distance beyond the frame of the bed-stock, it has been pushed under the bed, and the feathers have been pushed beyond each side of the board, until the bed was no thicker than one or two inches, in order that the ends of pieces of strong tape might be sewn firmly to the bed, along the line over which the rollers are to be placed, at such distances from each other as to admit of their being tied, from the outer side of the rollers, a little below the knee, over the centre of the leg, and just above the ankle. In sewing the ends of the tapes, a long needle has been pushed from underneath the bed, through it and through the tape upon it. On some occasions tapes have been fixed for tying above the knee also (over the thigh,) especially when there has been much spasm of the muscles; when the patient has had disturbed sleep, or has been naturally irritable, and very restless.

During the time occupied in preparing the bed, two sheets have been rolled up tightly, long enough to reach from above the knee to so far beyond the end of the foot, as to admit of being sewed together, including a half brick, folded in calico, at the end of the heel for the purpose of afterwards admitting a pile of covered bricks for a foot support. The rolled sheets have been rolled from each side of a piece of calico, about a yard broad, and the same length as the rolls, towards the centre of it, until they would just include a narrow pillow, placed upon padding above and below where the calf of the leg is to rest, so as *to avoid pressure on the heel*, and after the leg has been placed upon the pillow, having the feathers pushed from the centre, and defended by oiled silk, and three or four thicknesses of calico, folded lint has been placed upon the tibia, both above and below the fractured part, so as to keep off pressure from a splint placed along the bone, upon which the tapes are to be tied. Sometimes two tapes have been tied round the pillow and leg, the one above, and the other below, the calf, before tying the rollers: the rollers then have been rolled completely up to the pillow in which the leg was enveloped, and have been tied there with the three tapes on each side, over the splint.

If the patient was a poor man, having a bed only, (without a mattress), supported by cords, the board should not reach higher under the bed than the ham, because the hips will sink down into a hollow, and the board, with the thigh, will form a double inclined plane. The contrivances, of course, will be varied according to circumstances, whether any side splints be needful within the rolls, or any elevation of the foot above the knee, when the leg is much swollen.

In cases of compound fracture, the limb has been placed in the most convenient position for exposing the wound, whether the patient has been upon his back, with the leg straight, upon his side, with the knee bent, or half way between the two positions. If on the side, the front roll, of course, has reached from the knee to the instep only.

The wound has been covered with doubled lint, a little bloody; over it a larger piece of doubled lint, soaked with the compound tincture of benzoin, and over that a piece still larger, soaked, so as to seal up the wound airtight. If the leg be easy, and the lint free from any bad smell, the lint may remain ten or eleven days undisturbed; if uneasiness or offensive effluvium indicates the necessity of removing the lint sooner, the wound will show whether a poultice or any other application be desirable. The foregoing was the practice adopted in the Sheffield General Infirmary upwards of a quarter of a century ago.

Prov. Med. and Surg. Jour., July 11, 1849, p. 378.

DISEASES OF JOINTS, &c.

58.—ARTHROPATHIA OF THE SHOULDER-JOINT. By M. VELPEAU.

M. Velpeau designates the affections of the joints under the general term arthropathia; and in the present paper, a peculiar form of disease affecting the shoulder-joint is illustrated by several examples. Every surgeon meets with cases which are characterised by atrophy of the muscles of the shoulder, especially the deltoid; and numerous autopsies have assured M. Velpeau that the osseous portions of the joint participate in the atrophy. The deltoid may be reduced to almost a membranous condition, scarcely exhibiting any muscular fibres; and not only is the glenoid cavity diminished in size and depth, but the head of the humerus is lessened, and even its body diminished in volume and length. The cartilages disappear early, not as in ordinary caries, but sometimes by a sort of atrophy, and at others by undergoing osseous transformation.

The disease may commence as ordinary arthritis, but is soon found to differ from this by the slowness of its progress (M. Velpeau has known cases occupy more than twelve years before complete), and the accompanying atrophy. The original part affected seems to be the soft parts, especially the deltoid; and the constancy with which this is the case has led M. Velpeau to conjecture, that an affection of the circumflex nerve might be the original one. There are three distinct stages: the period of painful affection of the brachial plexus, or only of the circumflex, which, with the accompanying swelling has led to the disease being mistaken for rheumatism; the muscular atrophy; and the changes in the bones. In two of the cases cited there was observed a semi-luxation downwards, of easy temporary reduction. This luxation may be due to the elongation of the muscular fibres allowing the escape of the head. In treating these cases, three periods have to be observed. During the early and inflammatory period, repeated leechings, or, better still, small cuppings, friction with mercurial and belladonna ointment, and the application of emollient and resolvent cataplasms, are indicated. This period passed, large blisters, moxas, or the cautery before and behind the joints, baths, with local stimulants and tonic douches, either of plain, or sulphureous, or aromatic waters, are demanded. In the third stage, when the bony parts are affected, the derivative and antiphlogistic treatment is to be laid aside, and frictions, especially with the essential oil of turpentine, resorted to. They rouse the dormant vitality, and produce a cure in many cases apparently hopeless. The sagacity of the surgeon will decide between the two risks of causing anchylosis by leaving the arm too long unmoved, and the re-excitement of inflammation by moving it too soon. Of the two dangers, the first is the greatest; and in order to prevent it, we must not fear exciting a little pain. Cases are detailed in which even subluxation had been produced; and yet treatment has soon restored the plumpness and full use of the arm.—*Bulletin de Thérapeutique*, tom. xxxvi., pp. 64-73.

British and Foreign Medico-Chirurgical Review, Oct. 1849, *p.* 559.

59.—"BOW-LEGS." By E. F. LONSDALE, Esq., Assistant-Surgeon to the Orthopædic Hospital.

[This affection, outward curvature of the tibia and fibula, does not necessarily arise from any constitutional taint; it may originate simply from the bones being too weak to support the weight of the body. If there be general debility, or if the child has been badly nourished, and exposed to impure air, attention to these circumstances should of course be our first object. When, however, the case has not originated in these conditions, or, under any circumstances, if the affection is severe, we should use mechanical means of relief. In cases of bow-legs, Mr. Lonsdale observes,

though some children do certainly "grow out" of the deformity, the great majority will get worse, if left unchecked. As to the mechanical means to be adopted, Mr. Lonsdale says :]

For the common slight form of curvature, all that is required is, two calico bandages, two small wooden splints, and six webbing straps with buckles—three for each leg, two broad ones, and one narrow. The splints should be long enough to extend from the condyle of the femur down to the edge of the sole of the foot; they are to be padded at each end with a pad large and thick enough to cover the inside of the knee and the inner malleolus. If the pad be made in one piece, the two ends should be thicker than the centre. The splints should be quite as wide as the thickness of the leg—if anything a little wider: the object of this being to remove the pressure from the fore and back part of the limb, and making the straps press upon the outer side principally. They are applied as follows:—Bandage the leg evenly, from the toes upwards to a little above the knee; the use of this being to equalise the circulation and guard the skin from the irritation and friction of the straps and pads. The splint is then to be placed on the inside of the leg, so that the upper pad may rest on the inside of the knee and the lower one on the inner ankle: care should be taken not to allow the splint to fall forwards, or otherwise the lower end of it will press against the instep, and interfere with the child's walking, independently of preventing the pressure acting in the most favourable manner on the curve of the bone: the lower pad should also be thick enough to throw the end of the splint away from the foot. The knee and ankle straps should be attached to the splint in a position to correspond to these two joints when fastened, while the centre one should be left moveable to allow of its position being altered at pleasure, to accommodate itself to the most curved part of the bone opposite to which it should be placed. When the straps are tightened (and they should only be slightly so at first), the centre one should make the most pressure; care being taken to avoid pain and irritation on the skin, as well as swelling of the foot, which will occur if the ankle strap be too tight. If the inner malleolus be very prominent, and the skin very liable to become irritated by slight pressure, the lower end of the splint may be hollowed out opposite to the ankle; as a general rule, however, if the pad be made soft and thick, this is not required. The child should wear shoes, and not boots; the latter give no real support to the ankle joint, and only cause irritation to the skin when the straps are tightened on the pad that lies upon the boot: the former leaves the lower part of the leg quite free, and allows the ankle strap to be adapted to the lower end of the curve with more precision and effect than it would be if made to tell upon the hard leather of the boot.

The rules to be observed during the time the splints are being worn are few and simple:—To keep up sufficient pressure on the bone by gradually tightening the straps, more particularly the one or the two (if more than one are employed) that act upon the centre or most curved part of the bone. Never let the child stand without splints; when it is necessary to take them off to wash the child, let it lie down until they are reapplied. To guard against irritation of the skin by relieving the pressure if the child complains of pain. To attend to the general health of the child by giving strengthening and other medicines if required, and procuring change of air if practicable. Not to leave the splints off at once when the bones have become sufficiently straightened: to do so by degrees, beginning with an hour or two a day, and increasing the time every second or third day; the object of this is to avoid throwing the weight of the body suddenly on the ankle and knee-joints, by doing which an unequal strain might be made upon them, and a weakness produced, and a tendency to reoccasion the curvature, owing to the bones not being kept in the perpendicular position. There is one other point not mentioned, with regard to the thickness of the pad at the knees; if there be any tendency to knock-knees they should be made very thin, otherwise they only prevent the approximation of the

thigh bones, and throw the feet outwards, and bring the strain upon the knee-joints.

The length of time the splints will require to be worn must depend upon the period during which the deformity has existed, its degree of severity, and the age of the patient; as a general rule, the time will vary from six to twelve months; of course this being influenced by the above circumstances, as to whether it should be longer or shorter.*

Med. Gaz., July 6, 1849, p. 14.

60.—GENU VALGUM, OR KNOCK-KNEES. By E. F. Lonsdale, Esq., Assistant-Surgeon to the Orthopædic Hospital.

[This deformity, Mr. Lonsdale observes, usually commences when the child is first put upon his legs, its immediate cause being mechanical, though the remote one may be constitutional. The treatment for slight cases consists in change of air, strengthening medicines and nutritious diet; while in severer forms of the affection, or if even slight deformity continues to increase, mechanical support should be adopted. Mr. Lonsdale thus describes the method which he recommends:]

The simplest treatment, and at the same time a very effectual one is that employed at the Orthopædic Hospital: it consists of two long splints, extending from the hollow of the loins down to below the outer ankle, to nearly the ground. The upper end of the splints are notched with a slit to pass a long webbing strap through: the object of this strap is to connect the upper end of the two splints together, to keep them from falling too much forwards. This back strap should be so attached to the splint that it may lie in the hollow of the loins, just above the projection of the buttock: if it come on this latter part, it only displaces the splint, and pulls it upwards, removing the lower end from the ankle; and if the strap be attached too high up, owing to the splint being too long, it will not press against the child's back at all, and it will not steady the splints, besides causing an unnecessary projection beneath the child's clothes. Having procured splints of the proper length and width, (the latter being the width of the child's leg about the knee), they must be evenly padded, by making a long cushion of wadding or loose soft flock, and covered with calico and wash leather; (I often use dark-coloured leather in private practice,—it looks neater, and keeps cleaner). It is of importance to attend to the thickness of the lower end of the pad, which should be sufficient to throw the splint well off the outer ankle, to prevent the end of it pressing upon the instep, and so interfering with the child's walking. The pad should not come quite to the end of the splint: it must be fastened to the splint, either by turning it over the edge of it and running it across, or by piercing it through with small loops. If the pad and splint be not fastened together, neither the one nor the other will keep its place. If the common deal splints are used, the lower end is notched, to allow of the ankle strap (which must be longer and narrower than the one for the knee) being once twisted round it before it is passed round the ankle, or it may be tied and fastened through with a loop. By keeping the ankle strap fixed to the splint, the two are preserved in their proper position. Having placed the splints, then, on the outside of either leg, seeing that the upper ends are resting against the trochanters of the thigh bones, and the lower on the outer ankles, they are to be fixed in this position by buckling the upper strap across the loins, and the lower ones round the ankles. The next point is to confine the knees, and this is done by applying a broad webbing strap round the joint, taking care that it embraces the head of the tibia as well as the condyle of the femur. It is then to be buckled sufficiently tight to draw the knee outwards towards the splint. In slight cases the joints can be straightened at once by these means; in the severer cases it must be done more gradually, by tightening the straps a little more every second or third day.

[* In these cases, a useful medicine is the phosphate of lime, ten or fifteen grains once or twice a day, mixed with the food of the child.—Ed.]

By adopting the above treatment till the knees keep their proper position; when the splints are taken off, all cases of slight knock-knees may be cured in from three to six months. The severer cases occupy a longer time, and require other treatment, which I shall refer to in my next paper. One important rule to observe in the employment of the splints is, *never to let the child stand without them before the legs are straight*, and to keep the splints always on the outside,—not to let them fall forwards, when all purchase on the knee-joints would be lost. The legs must of course be evenly bandaged before the straps and splints are applied, to prevent the feet swelling, and the skin being irritated. When the child is washed, and the bandages changed, it should always be made to lie down, to avoid any strain on the ligaments of the knee; for more mischief might be done by so doing, than could be recovered from for some time, and the treatment be thereby unnecessarily prolonged. *Med. Gaz. July 6. 1849, p. 18.*

[In severe cases of knock-knees, it is difficult to keep these straight splints in position, and Mr. Lonsdale in such cases recommends the splint to be made with a joint at the knee. He says:

I have employed the following kind of splint, made on the above principle, which enables the patient to move about, at the same time that the splint is kept in action, and in close apposition to the limb. Two narrow splints about an inch and a half wide and a third of an inch thick, and long enough to extend from just above the trochanter down to the outer edge of the foot, are jointed at the point opposite the knee. To the two pieces thus connected a male and female screw are attached, so keeping the angle of the splint fixed in any position. The whole splint is evenly, but not thickly padded with wadding, and covered with wash-leather. The splint is fixed to the leg in the following manner:—A stocking is made of wash leather, to lace in front, and to extend from the instep up to the groin. To this stocking the splint is to be attached throughout its whole length, so that when it is applied evenly to the outside of the limb, and the stocking laced closely up, it cannot shift its place. Should it, however, be inclined to do so, owing to the severity of the knock-knees, this can be guarded against, by having a small slide made of thin iron to fit into a box in the boot or shoe, just in front of the heel, with a hinge to allow of motion at the ankle-joint. The upper ends of the two splints are also more firmly fixed, by having a broad strap or belt to pass round the pelvis and loins. The splints being thus firmly applied, the screw on the outside of each knee is gradually turned, to keep up traction on the joints, sufficient to draw them outwards more and more every second and third day. If the knee part of the leather stocking do not fit very close, an additional webbing strap must be passed round the joint and splint; otherwise, when the screws are turned, the splint will move without acting on the knee. A splint made and applied in the above manner looks exceedingly neat, and acts very efficiently, the child being able to walk about without any fear of the apparatus being displaced, at the same time that the knee-joints are kept in position. The small piece of iron fitting into the boot is a very efficient means of preventing the lower end of the splint from slipping forwards on to the instep.

Another very useful apparatus employed at the hospital by Mr. Tamplin, and adapted for the severest kinds of genu valgum, is the following: it consists of a kind of trough, having a back and outside piece, jointed opposite to the knee, and moved at any angle by the common male and female screw. The splint is well padded, and has two sets of straps, so arranged that they fix the limb to the outer and back portions of it, by having one strap passing through the outer and another through the back part of the splint alternately, from the ankle up to the groin.

The points to attend to in using it are—to fit the splint closely to the shape of the limb, by screwing it to an angle to correspond with the angle of the knee; to roll the limb evenly from the toes up to the groin; to see that the pad lies smooth and even; to place the limb quite flat in the splint,

so that it may not roll on its outer side (when all action on the joint would be lost); to tighten the straps, beginning with the ankle one, making the pressure less on the thigh than leg. A very broad strap, with a separate thick pad, will be required for the knee, to be placed on the inside; this strap should be tightened sufficiently to keep the splint and knee in close contact, without producing pain. The limb being firmly fixed to the splint, the screw on the outside is to be gradually turned every second or third day, till the joint is straightened, which is ascertained by the leg and foot being brought into a line with the thigh and hip. This is a guide, provided the leg is lying flat in the splint. If it be rolled over on its outer side, it will look straighter than it really is. The splint I have just described is only used for the severest cases of knock knees, when the patient is obliged to keep the horizontal position during the treatment.

In the most severe form of knock-knees it may be necessary to divide the tendon of the biceps flexor cruris. In cases of long standing, when this muscle has become so much shortened as to be a cause of preventing the straightening of the joint, mechanical means only may not be sufficient to overcome the deformity. A distinction must be made, however, in examining the joint, between the voluntary contraction of the muscle by the patient, and the permanent contraction which is found when the attempt is passively made to move the joint. *Med. Gaz. July 27, 1849, p. 146.*

61.—TREATMENT OF CLUB-FOOT.—By E. F. Lonsdale, Esq.

[In the treatment of some cases of club-foot, the use of mechanical means alone will be sufficient. As a general rule, however, the division of tendons should also be had recourse to. Upon this subject Mr. Lonsdale observes:]

The division of tendons, though apparently a simple operation, requires great nicety in its performance, and in many cases a good deal of experience, both in finding the precise situation of the tendon, as well as in knowing when it is divided. In this latter part the surgeon often must depend upon him who assists in the operation to know for certain whether the tendon has been divided at all, or if partially instead of completely: the tendon to which these remarks mostly refer is that of the posterior tibial muscle. In infants and adults very often it is difficult for the operator always to know when he has cut it through; he trusts then solely to the assistant, who should be able to tell by the amount of yielding of the foot, as well as by feeling the substance of the tendon divided at the same time, whether such be the case or not; and if any doubt arise, either in his or in the operator's mind, the knife should be again passed beneath the tendon, and attempts made again to divide it.

The tendon most easily divided is the tendo-achillis: its position and size, as well as its separation from the deeper parts, offer great facility in ascertaining its precise boundaries, as well as for the passage of the knife beneath it. Some precautions, however, are here necessary to avoid untoward circumstances, the two principal of which are, transfixing the skin, either in passing the knife inwards, or after the tendon has been divided; the other precaution to take is, to avoid the posterior tibial artery, which, however, is more necessary in infants than adults; in very many cases of infantile varus the tendo achillis becomes so much displaced inwards that it lies almost over the artery, and nearly in contact with it. If the point of the knife be passed too deeply before it is made to turn beneath the tendon the vessel might be punctured. This accident is more likely to happen in very fat children, and in very thin ones, owing to the great nicety then required in calculating the precise depth at which the tendon lies.

In some of the violent spasmodic cases of contraction of the muscles of the calf, great care is required to prevent the knife dividing the skin,

when the ends of the tendon yield so suddenly, and bring the edge of the knife against its inner surface before the surgeon might be aware of it. Much depends also upon the assistant in these spasmodic cases to watch closely when the division of the tendon takes place, and to immediately relax the foot at the same time that the operator turns the edge of the knife downwards, before withdrawing it.

The posterior tibial tendon is certainly the most difficult to divide, both from the absence (as a general rule) of any definite shape or size to serve as a guide to its *precise* situation. In very fat infants it is next to impossible to feel the tendon itself through the skin; and to feel the only sure guide to it, namely, the inner edge of the tibia. Much tact and experience is required in these cases, in the assistant as well as the operator.

The posterior tibial artery is sometimes wounded and divided completely, and this is not to be wondered at, when the close position of the vessel to the tendon is considered, for there is no certain guide to the thickness or to the depth at which the tendon may be placed: I have never seen any evil consequences myself arise from it, provided it be completely divided across; the vessel then retracts, and closes here as in other situations, and all fear of aneurism is avoided. When the artery has been divided graduated compresses should be placed over it, and the limb be evenly bandaged from the toes upwards, and should not be looked at for a fortnight or three weeks.

The division of tendons, though so important and nice an operation, is certainly one of the most harmless in surgery, when done with care and attention: for out of the many cases that I have seen operated on, and have operated on myself, together amounting to the division of some hundreds of tendons, I do not remember a single case during the last five years where the wound has not healed by the first intention, without the slightest approach to inflammation, or any untoward circumstance. It is this fact that ensures a more certain cure now than when the operation was first introduced; for the harmlessness of the division of tendons necessarily admits of more boldness in this branch of surgery, by allowing the surgeon to divide with impunity all those parts, whether tendons or bands of fascia, which exist as obstacles to the perfection or the cure. The grand reason, no doubt, of the safety of the operation, as well as of the certainty of the union of the two ends of the tendon, is owing to the division being so completely subcutaneous, there being simply the puncture in the skin produced by the narrow blade of the knife, and which heals in the first four and twenty hours. Reparation then goes on without the possibility of any interruption, provided the foot be kept at rest, and its natural warmth preserved.

Two methods are employed for the division of tendons: the one, that of passing the knife between the tendon, and then cutting upwards towards the skin; the other, that of passing the knife first between the skin and the tendon, and then cutting downwards, or from the skin. My own impression is that the former is decidedly a more preferable mode of operating than the latter.

Rest, amounting to the prevention of all movement between the two ends of the tendon, must be preserved for the first eight and forty hours. This is gained by placing the limb in the horizontal position, and by fixing the joint in such a position that the divided portions of the tendon may be in as close contact as possible, to secure the first stage of the union commencing without interruption.

Warmth is another essential point to attend to, more particularly in cases of division of the tendon in paralysed limbs. The whole limb should be kept constantly covered either in a flannel bandage, or be wrapped up in flannel.

[It must be remembered, however, that the division of tendons is only the preliminary step to the use of those mechanical means, without which the cure cannot be effected. Mr. Lonsdale remarks, that whatever be the

kind of machine or instrument used, the principal points to be attended to are,—to begin the extension at a sufficient and yet not too great interval after the division of the tendon,—to avoid unequal pressure,—to make the extension very gradual and regular, and so to conduct it that it shall not produce pain,—and to insist upon it that the patient himself shall not interfere with the apparatus except it produces pain.]

Med. Gaz., Oct. 5, 1849, p. 575.

AMPUTATIONS, &c.

8.—CASE OF RESECTION OF THE HEAD OF THE FEMUR.—By W. Fergusson, Esq., Surgeon to King's College Hospital.

[This was a case of morbus coxarious in its last stage, the patient being a boy of ten years old. We are told that the patient having been put under the influence of chloroform,]

Mr. Fergusson carefully examined the parts with his finger, and then commenced the operation in the following manner:—An incision about four inches in length, was made over the head of the bone, and carried below the great trochanter; the soft tissues were dissected from the sides of the bone, and the knife cautiously carried behind its neck, separating, as much as possible, the soft parts; the limb was then carried inwards by an assistant, and the section made by a small saw, below the trochanter major, and that process, together with the head of the femur, removed.

The cotyloid cavity was then examined, for the purpose of ascertaining if there was any disease to be removed, but it was discovered to be filled up with a mass of soft tissue which had been thrown out during the course of the malady. Several small vessels required a ligature; the wound was brought together, and the patient removed to bed. After the removal of the bone, the limb could be brought down straight with the other.

Mr. Fergusson, in the course of some observations, stated this to be one of those cases which surgeons, in London at least, denominated morbus coxarious in its last stage, and that the little boy, who had laboured for eighteen months under the disease, was sent into the hospital for his opinion as to the propriety of performing the operation of re-section of the head of the femur. When the patient was first brought into the house, it was evident that dislocation existed; there was a large open sore over the trochanter major, and a profuse discharge of matter coming from it, which had greatly debilitated him. In order to ascertain the precise condition of the bone, and also to give some relief to the patient, a counter-opening above the trochanter had been made, and the head of the femur exposed, lying on the dorsum ilii, and in the centre of a large abscess. The cartilage could be felt on the bone, but its structure was so softened, that it could easily be penetrated by means of a probe. This measure had given the child some relief, but little hopes of further improvement; Mr. Fergusson regarded the head of the thigh bone as a foreign substance, keeping up irritation; and as he could not ascertain that there was any disease within the pelvis, nor in any organ of the body, he, therefore, considered it best for the patient to give him the benefit of the operation.

He had performed it in the same manner as they had before seen; he had removed the trochanter as well as the head of the bone, not because there was any disease within that process, but, because he had found from experience, that the wound healed more readily, and less irritation was afterwards caused, than when it was permitted to remain. They had seen that the limb could be straightened after the diseased part was taken away, and they would be able to keep it in a good position by the application of a splint.

With respect to the condition of the acetabulum, it was probable that in

this instance disease had at one time been present; but in this, as in other cases, after dislocation had taken place, and the two surfaces of the joint were no longer in contact, a reparative process had followed, and the morbid action in the acetablum had ceased.

There had been much discussion as to the propriety of this operation; it was a subject which admitted of, and ought to have, a fair and open discussion amongst surgeons; he looked upon the present case as one of great interest, and he hoped that it would turn out satisfactorily.

Med. Times, July 28, 1849, *p.* 73.

63.—ON A MODIFICATION OF SYME'S OPERATION.—By Dr. R. J. Mackenzie, Assistant Surgeon to the Edinburgh Infirmary.

[While he believes that the incisions now recommended and practised by Mr. Syme, will, in the majority of cases, ensure a good and useful stump, Dr. Mackenzie yet says]

I am induced to direct attention to the following mode of operating, from the fact that, in some cases, it appears to me to possess advantages over the other operation; whilst, occasionally, cases may occur where the integuments of the heel may be saved to form a covering for the ends of the bones, only by the following incisions:—

On the right foot.—The body reclining on the right side, and the foot and ankle projecting beyond the table with their internal aspect upwards, the point of the knife is entered in the mesial line of the posterior aspect of the ankle, on a level with the articulation, carried downwards, obliquely across the *tendo achillis* towards the external border of the plantar aspect of the heel, along which it is continued in a semilunar direction. The incision is then curved across the sole of the foot, and terminates on the inner side of the tendon of the *tibialis anticus*, about an inch in front of the inner *malleolus*. The second incision is carried across the outer aspect of the ankle in a semilunar direction, between the extremities of the first incisions, the convexity of the incision downwards, and passing half-an-inch below the external *malleolus*. The flap is now dissected up, care being taken that the knife cuts close on the bones, so as to preserve the whole thickness of the soft parts. By holding the base of the flap between the fingers and thumb, as it is detached from the bones, all risk of wounding the artery at this stage is avoided. The foot is then severed at the articulation, and the ends of the *tibia* and *fibula* cleared so as to allow of the application of the saw, by which a thin slice of the extremities of these bones is removed, as in Mr. Syme's operation.

The operation is very easily and rapidly performed, and, with a very moderate amount of care on the part of the operator, the artery runs no risk of being injured. It is in clearing the ends of the *tibia* and *fibula* for the application of the saw in this, as well as in Mr. Syme's operation, that the artery is, I believe, in the greatest danger of being wounded. It is avoided by cutting close on the bones, a point to be attended to during the whole dissection in either operation.

The operation on the left foot is the same, but, as the patient reclines on the left side, the order of incision is reversed, the knife being first entered at the point above indicated, in front of the inner *malleolus*.

M. Sedillot of Strasbourg has since recommended a similar method of performing the operation. The incisions made by M. S. scarcely differ at all from those I have recommended; but their order is reversed, the first incision being made on the fibular aspect of the foot, the articulation opened, and the flap cut from within outwards.

The cases in which, I think, this operation may with advantage be substituted for Mr. Syme's method, are,—1st, those in which the integuments on the outer side of the ankle are in an unsound state, either from disease

or injury; 2nd, in elderly persons, whose arteries are not well suited to bear with impunity the stretching, which occasionally occurs in separating the integuments from around a projecting heel; lastly, it may, from the ease with which it is performed, be preferred by those who have not the frequent opportunities of operating on the dead body, which are requisite for enabling them to perform the other operation with facility.

Monthly Jour., Aug. 1849, *p.* 951.

64.—QUESTION OF AMPUTATION IN TRAUMATIC TETANUS SUPERVENING UPON INJURY TO A LIMB.—By Bransby B. Cooper, Esq., F.R.S.

[Speaking upon this question, Mr. Cooper first reminds us, that in cases of traumatic tetanus, the injury can only be regarded, as its *exciting cause*, there being always a kind of *tetanic diathesis* pre-existing. He then proceeds to say:]

Baron Larrey, during the war in Egypt, amputated in several cases, after symptoms of tetanus had commenced, and this practice was attended with sufficient success to induce him to recommend it. Instead, however, of the general adoption of this plan, I should recommend that the condition of the wound should first be strictly examined, and also the state of the constitution of the patient; so that where there appears the least tendency to tetanus, prophylactic measures may be taken to ward off the attack.

When, for example, there seems reason to dread an attack of tetanus in consequence of a punctured wound, the latter ought to be converted into an incised one by laying it freely open to the same depth as the original puncture; and, should it then be discovered that a branch of a nerve had been punctured, or partially divided, it ought at once to be cut completely through, so as to remove the continued irritation that would arise from its being only wounded. It has been said that suppuration prevents the accession of tetanic symptoms, and that it even relieves them after they have set in. If this could be proved to be the case, it would of course be desirable to promote suppuration as a prophylactic means of treatment. My own experience leads me, however, to doubt the correctness of the hypothesis; for I have witnessed three successive cases of tetanus in which the symptoms first appeared during the progress of suppuration, and in each of these cases the discharge of pus went on until the death of the patient. I cannot, therefore, approve of the plan adopted by some surgeons, of cauterising the wound, to induce suppuration. The following case is one in which I was induced to amputate a limb after tetanic symptoms had supervened. In this instance, I was the more disposed to have recourse to this practice, as the injury was so severe that there existed no probability of the limb being restored to a state of usefulness.

William Marshall, æt. 11, was admitted into Guy's hospital, on April 14th, 1849. His left leg and foot had been very severely injured by a luggage train crushing it against some brick-work. There was a large wound on the inner side of the left tibia, extending upwards from the malleolus to the extent of two inches. The saphena major vein was exposed, the posterior tibial artery torn through, and the nerve laid bare. It was considered advisable by Mr. Hilton to endeavour to save the limb, and he therefore placed a ligature on the proximal extremity of the divided artery, brought the soft parts together by sutures and strapping, and applied an outer splint with a foot-piece. The limb was kept in a somewhat elevated position. As the lad was in a state of partial collapse, stimuli were administered; reaction was consequently produced soon after.

On the day after his admission, he had recovered from the shock; had slept during the night, and the limb was easy. On the 16th, the sutures were removed, and the wound was found to be in a sloughing condition. The sloughing continued for the next two days; a sanious discharge had

also commenced, and the lad had become irritable and restless. He remained in nearly the same state until the 26th, when I first saw him. I at once saw reason to fear that there was a tetanic tendency, and I desired that I might receive notice the moment any muscular contractions or other tetanic symptoms were manifested. On the evening of the 26th it was observed that the injured limb was drawn up by spasms, and that there was a twitching of the muscles, and the patient was altogether very restless. On the 27th there was distinct symptoms of tetanus; the corners of the mouth were drawn up, nose pinched, and there was general rigidity of the facial muscles. He was extremely restless and irritable. These symptoms all continued to increase during the morning, notwithstanding treatment, and I was accordingly sent for, as I had requested. As soon as I saw the boy I determined upon immediate amputation, and this was performed below the knee by the circular incision. Five ligatures were required. Four hours after the operation the wound was dressed. There was no subsequent bleeding.

On the 28th all the tetanic symptoms had disappeared; the face of the patient was restored to its natural expression; his mouth could be opened freely, and he was less irritable. He continued to go on well for some days, so far as concerned his health, taking plenty of nourishment, but there was no indication of healing in the stump. On the 1st of May he became again restless and irritable; there was slight redness of the left knee, and some swelling of the right foot, with tenderness upon pressure. No reparative action had been set up in the stump. All these symptoms continued to increase, the swelling of the right foot extending up the leg to the abdomen; the breathing also was hurried, and there was slight cough. The stump still showed no disposition to heal, and poured out an unhealthy sanious discharge. The symptoms continued unchanged, the patient daily became weaker, until the 11th of May when he died. *Med. Gaz. Sept.* 14, 1849, *p.* 443.

6.—CASE OF RE-UNION OF FINGERS AFTER COMPLETE SEPARATION.—By J. Denny, Esq., Resident Surgeon to the Stoke Newington Dispensary.

A labouring man applied to me to dress the thumb and forefinger of the left hand, having, as he stated, met with an accident, whilst cutting or chopping a handful of grass with a sickle. Upon examination I found he had, by a clean incision, cut out of the thumb a triangular shaped piece, the incision extending from the end down the centre of the nail, nearly to the root, then outwards towards the forefinger. The piece thus disunited consisted of the portion of nail described, integument, muscle, and a minute portion of bone. From the finger he had nearly sliced off a piece of muscle and integument on the side next to the thumb. I sent him back to the distance of two miles, to search amongst the grass for the dismembered portions, which he succeeded in finding, and which, upon his return I carefully washed with warm water, and adjusted in exact apposition to the surfaces from whence they were cut. I freely applied collodion, so as effectually to exclude the atmosphere, and prevent any further hemorrhage and with narrow pieces of strapping held them firmly in the position in which I had placed them. The result has been the perfect reunion of both pieces, leaving little or no cicatrix.

I should mention that the period that elapsed from the occurrence of the accident to the replacing of the parts was four hours; also that the pain, which was very acute, from the exposure of the cut surfaces to the atmosphere, ceased immediately that the parts were replaced; and the man experienced little or no pain afterwards. *Lancet, Sept.* 15, 1849, *p.* 295.

ORGANS OF CIRCULATION.

66.—CASE OF ANEURISM OF THE AXILLARY ARTERY.—By Henry Hancock, Esq., Surgeon to the Charing Cross Hospital.

[The patient was a bargeman, thirty-four years of age. and on the 19th August, 1848, when he came under Mr. Hancock's care, he stated that he had first perceived the swelling about six months previously.]

At the time of admission, a large pulsating tumour occupied the whole of the axilla, and extended under the pectoral muscles, which were pushed forwards, the clavicle being considerably raised. The tumour also extended down the upper two thirds of the arm. He could not bring his elbow to his side; his hand was swollen and numbed, and there was great loss of power and intolerance of motion in the entire limb. The tumour, which diminished on pressure, again augmented when the pressure was removed: it also diminished when the subclavian artery was compressed; there was evident bruit de soufflet, and the aneurismal thrill could easily be detected by the touch, whilst the pulsation of the tumour was evident to the eye. He was ordered to be bled to fourteen ounces, to take two grains of alum thrice daily, with a grain of the muriate of morphia at night.

He continued this medicine until the 26th, when I placed a ligature on the subclavian artery, at the first rib, immediately external to the scalenus anticus muscle. This was done without much difficulty, and with very little disturbance to the surrounding parts; the only difficulty experienced was from the depth of the artery, which I could but just reach with the point of my index finger; and for the same reason it was found necessary to diminish the curve of the silver aneurism-needle very considerably before I could insert it beneath the vessel. The ligature having been tied, pulsation could no longer be felt in the tumour; the wound was brought together by sutures and strappings, and the patient put to bed with the arm elevated, and enveloped in warm flannels, by which the temperature of the limb was well kept up during the night and next day. He was ordered an opiate, and saline medicine.

[The tumour afterwards suppurated and burst; and on Oct. 4th, the fortieth day from the operation, and the eighteenth after the ligature had come away, a burst of hemorrhage took place, and he died. On a post mortem examination, it was found that]

The artery on the distal side of the opening was diminished in size. The ligature had been placed on the subclavian, nearly midway between the thyroid axis, and the first of the thoracic branches, which, like those of the thyroid axis, appears to be enlarged. The ends of the artery divided by the ligature were closed by adhesive inflammation strengthened by a coagulum in each of half an inch in length, but which did not extend as far as the collateral branch given off above or below it, in this respect differing from the extent to which it has been commonly supposed to proceed. The artery was of its natural size, and gave off six branches between the part on which the ligature was applied, and the opening in the side of the artery into the sac. Three of these were large, one being equal in size to the thyroid axis, and it is my belief that the fatal hemorrhage took place from one or more of these vessels bringing their blood backwards into the artery above the opening into the sac. This was suppurating, and contained only a small coagulum opposite the opening in the artery, about the size of a small walnut, which adhered to its edges, and had in all probability closed up the communication between the vessel and the sac, thus preventing the entrance of blood into the latter. When the adhesions of this clot gave way at its lower and anterior portion, for about half an inch, the sudden and fatal hemorrhage took place. It must be admitted, that although the operation was successful in so far as the application and separation of the ligature, the division of the artery and the adhesion of its extremities, were con-

cerned, it was of very little use in this case. It afforded the patient a chance of life, but it singularly failed in the usually supposed result of obliteration of the trunk of the vessel, even to the next collateral branches. The communication between the branches of the thyroid axis and those on the distal side of the ligature soon becoming free and direct, the circulation to the opening in the vessel was in fact restored, so that from the moment the suppuration caused the skin to give way, the patient's existence depended upon the small coagulum filling up the opening, thus showing the importance of the sac, and the necessity of its remaining entire, in order to ensure success in the operation for aneurism, even when the ligature is applied so closely to the disease as it is usually done in cases of operation on the subclavian artery.

If I had had the good fortune to be present when the bleeding began, I should at once have laid open the sac of the aneurism, now become an abscess, and placed my finger, if possible, on the bleeding vessel, until a ligature could be affixed around it. I should, in fact, have treated the case as one of wounded artery, and which would in all probability have required another ligature at its opposite end.

This case proves in a very remarkable manner the importance of the sac in all cases of aneurism, and the utter inapplicability of the Hunterian theory of the operation for aneurism to a wounded artery, in which no sac exists, an inapplicability which Mr. Guthrie was the first to bring under the notice of the profession, and which he has so strenuously urged in his lectures, lately published, on Wounds and Injuries of Arteries.

The statistics of the various operations recorded in the European journals bear testimony to the unfavourable results of the present mode of proceeding.

I have collected the particulars of forty-two cases, and they demonstrate, that, in the aggregate, the recoveries number two to one failure, that in those cases traced to injury where the ligature was placed in the situation usually selected on the subclavian, external to the scalenus anticus muscle, the failures are nearly equal to the recoveries—of those in which the axillary artery itself was tied, the whole recovered, as may be seen in the following summary.

Of the forty-two cases, twenty-seven recovered, fourteen failed, and the result of one is not stated. Of the twenty seven recoveries, fourteen were the result of accident, and thirteen spontaneous, or idiopathic. Of the fourteen failures, eight were traced to injury, and six were spontaneous, and of the whole number more than half were those in which the subclavian was tied, the aneurism originating in violence, so that the following are the results:—

Four cases the result of accident, the axillary artery tied, and the whole recovered. In three of these the sac suppurated, and in one of the latter secondary hemorrhage took place on the nineteenth day, but it was easily suppressed by styptics. Eighteen cases the result of accident; the subclavian artery tied. Ten succeeded, eight failed. In two of the successful cases the sac suppurated, one in a few days, the other not until three years after the operation. Of the eight failures, the sac suppurated in four, in one, bursting into the pleural cavity. Nineteen cases of spontaneous axillary aneurism, the subclavian artery tied, thirteen succeeded, six failed. Of the successful cases the sac suppurated in three. Of the unsuccessful cases the sac suppurated in one.

The above whilst giving the results of the two modes of operation. also shows the relative number of cases in which the sac suppurated in the traumatic and idiopathic form of axillary aneurism; whilst in twenty-two cases resulting from injury we have nine, of nineteen cases originating in disease, we have only four followed by suppuration of the sac.

After the data here given, ought we so indiscriminately to tie the subclavian artery in cases of axillary aneurism as has hitherto been done? Should we

not rather tie the axillary artery itself in all cases where the mischief can be traced to a direct injury, and where the size of the tumour admits of our reaching this vessel? Hitherto, whether the aneurism has been caused by a stab, a gun-shot wound, rupture by violent stretching, a blow or crush, or by disease, with very few exceptions the treatment has been the same. According to this method, the ligature is applied at such a distance from the sac, that the blood is carried freely into the main trunk between the ligature and the point of rupture; and consequently, in those instances, as in the case above related, where the vessel retains its natural size, and the sac suppurates, the patient must be exposed to secondary hemorrhage, and its lamentable consequences; whereas, if the axillary artery is tied close to the sac, and below the large collateral branches, the free current of blood into the sac is prevented, so that should suppuration of the latter take place, it would diminish but slightly the chances of recovery as far as hemorrhage is concerned. We have seen the large proportion of recoveries where this practice has been adopted, and been followed by suppuration; in three out of four cases suppuration took place, but all recovered, and in one, although secondary hemorrhage ensued, it was so slight as to be easily restrained by styptics. How different is this from what obtained in the case I have detailed; there the sac suppurated, and hemorrhage occurred, but so violent, that the patient, although receiving immediate assistance, was to all intents dead from the moment it gushed forth.

Lancet, July 7, 1849, p. 7.

67.—TREATMENT OF SPURIOUS ANEURISM.—By JOHN ADAMS, Esq., Surgeon to the London Hospital.

[If the brachial artery is unfortunately wounded in performing venesection, the proper practice is by no means, Mr. Adams says, to cut down upon the artery immediately: Mr. A. tells us,]

Proceed in the following manner: roll up a sixpence or any firm body in a piece of lint or soft rag, and place it over the wound, having accurately squeezed the edges of the wound together, and then, by carefully adjusted pressure carried a little above and below the wound in the course of the radial, ulnar, and humeral arteries, to diminish the impetus of the blood, the arm being bandaged to a splint, you may often succeed in completely curing the injury, and in preventing the formation of spurious aneurism. At any rate, you will get a closure of the wound of the integuments, and if an aneurism forms you will then have time to ponder over the necessary treatment of such a case. This treatment is not, however, always to be followed in wounded arteries, many of which it is better to tie at once.

[An aneurism, then, may arise in the following manner:]

A man receives an incised or punctured wound in an artery, and, by the application of pressure, the hemorrhage is stopped, and the wound heals. In the course of two or three days he perceives a pulsating tumour in the situation of the original wound, and a spurious aneurism is established. In the formation of this aneurism one of two things has happened: either the blood has formed for itself a circumscribed space communicating with the artery, the parts around which have become condensed into a sac, or else a cicatrix has been formed by the exudation of plastic lymph between the edges of the wound in the vessel, and this has gradually yielded, so as eventually to give rise to the formation of a sac, thus composed partly of this expanded cicatrix, and partly by the yielding coats of the artery.

[The treatment of such a case, M. Adams thus describes:]

You must apply a compress over the aneurismal sac, and this should extend some distance above in the course of the artery implicated; you are then carefully to bandage the fingers and thumb, and then carry your bandage as high as the axils, so as to give uniform support to the entire limb,

except that a little more pressure is exerted upon the sac and artery connected with it; you direct the patient to keep his arm perfectly quiet, and raise it on an inclined plane: in a short time you will find the pulsation diminish, and the cure will progress. As to the mode in which the cure takes place, it must depend either on the obliteration of the artery at the seat of disease, or else the coats of the artery contract to their original dimensions, and the vessel resumes its natural condition.

If pressure does not succeed in arresting the progress of the disease, the artery must be tied above the tumour, or you may cut into the sac, and tie the artery above and below; for myself I prefer the former method. You must, however, recollect, that even the ligature upon the artery above will not always be sufficient, as considerable pulsation is very likely to return in the aneurismal sac after the ligature; the anatomical disposition of the ulnar artery will readily afford you an explanation of this phenomenon: under these circumstances the employment of slight pressure, after you have taken off the impetus of the blood by the ligature, will in the majority of instances readily effect your object. *Med. Gaz., Aug.* 10, 1849, *p.* 222.

68.—NEW INSTRUMENT FOR THE TREATMENT OF ANEURISM.—By Dr. Carte.

If differs from all others hitherto employed, in that the compressing medium is an *elastic* instead of an *unyielding* force. It may be adapted to all cases of aneurism occurring in the extremities where compression can be employed; and, from the trials already made, I have every expectation that it will meet with the general approbation of the profession.

The shape of the framework of the instrument is immaterial so far as regards the adaptation of the compressing force; it may either be in the form of the ordinary clamp, or in that of the ring tourniquet. The latter I consider to be the best, as it is less liable to slip when once placed upon the limb. The following is a brief description of the instrument:—To one side of the framework is attached a well-padded splint, and to the opposite side a ball and socket, or universal joint, which allows the compressing force to be applied in any direction required. Through the centre of the ball (but sliding freely in it) runs a screw about six or seven inches long, the lower end of which is terminated by a pad for compressing the artery, whilst its upper end is flattened into a handle for the purpose of turning the screw. Half an inch above the ball, but immovably attached to it, is a small iron stage; above this, again, is a corresponding *movable* one, having in its centre the worm of a female screw, through which passes the long male screw bearing the pad. These two stages are united at their edges by two bands of vulcanized India-rubber, in such a way, that when the instrument is applied to a limb, the upper or movable stage (through the medium of the female screw in its centre, becomes a *point d'appui*, against which the elastic force of the vulcanized India-rubber acts; and, by advancing the male screw as the upper stage is raised, a corresponding tension is thrown upon the elastic material. The exact amount of force required for controlling the circulation through the vessel can thus with the utmost nicety be applied, and at the same time the tension can be relieved by simply reversing the action of the screw. This principle may be modified in various ways; for instance, a rackwork, similar to that of the patent corkscrew, might be substituted for the male and female screw. *Med. Times, June* 2, 1849, *p.* 604.

69.—ON THE MEANS OF ARRESTING HEMORRHAGE.—By Bransby B. Cooper, Esq., F.R.S.

Actual cautery is, perhaps, next to ligature, the most certain means that

can be adopted to restrain the flow of blood from a ruptured or wounded vessel, and can often be employed where a ligature cannot be applied, as in those operations in which bones are implicated, especially the bones of the face; and no surgeon should undertake the removal of a part of the upper jaw, for instance, without being prepared with the proper apparatus for the application of the actual cautery. An instrument which I use for the purpose consists merely of a small rod of polished iron, furnished with a sheath; in the operation, the sheath is to be passed to the mouth of the bleeding artery, and the heated rod then inserted and passed along this canula, until it reaches the artery, which it cauterises without danger of burning the surrounding parts. I once succeeded completely in stopping by this means a severe hemorrhage which followed the extraction of a tooth by Mr. Canton. A frequent method of checking bleeding from this cause is by driving a peg of wood into the alveolar process; but although this plan may prove effectual, it is to be remembered that a foreign body is introduced into the living bone, and may be the cause of much future mischief.

Torsion.—The French surgeons have recommended torsion instead of ligature, when the bleeding vessel is of secondary size; but I have found very little certainty in this treatment, although I believe that failure often results from the manner in which the operation is performed; it is requisite that the bleeding vessel only should be seized by the forceps, and that a sufficient degree of *tension* should be applied to it to tear through the cellular connection; thus depriving the vessel of nutrition by rupturing the vasa vasorum, and at the same time producing lesion of the internal coat; *torsion* is then applied merely for the purpose of destroying the physical elasticity of the outer coat; and if any of the surrounding tissue be taken up as well as the artery, it will be found difficult to effect the objects required. It may be asked, what are the proposed advantages of torsion over ligature? It does away with the necessity for the introduction of a foreign body into the wound, and consequently avoids the difficulties that subsequently arise in the separation of the ligature. But still I am of opinion that torsion should never be attempted excepting in cases of the smaller vessels. I have frequently found it useful in the extirpation of the mamma, when the hemorrhage has been troublesome from numerous small arterial branches; and if a ligature had been applied to each of these, a large amount of extraneous matter would have been introduced into the wound.

Compression is a further means of checking hemorrhage; and it is also now employed for the cure of aneurism. When used as a means for stopping bleeding, it should not merely be applied upon the wound in the vessel itself, but the bandaging should be so employed as to modify the circulation throughout the whole limb,—as, for instance, suppose a deep punctured wound in the palm of the hand, followed by hemorrhage, which it is thought advisable to attempt to restrain by compression. A bandage should be first applied round each finger separately, and then continued around the hand, a compress being placed immediately over the wound. The bandage should be continued up the forearm, and small compresses of cork placed on the radial and ulnar arteries, with sufficient pressure to diminish without wholly stopping the supply of blood to the hand. The bandage should be continued with a moderate degree of tightness as far as the shoulder.

The patient ought to be kept in the recumbent position, and a low equable temperature maintained in the arm by the application of cold water. A gentle immediate compression may, however, be sufficient without the employment of the gradual impression by bandage.

Med. Gaz., June 8, 1849, *p.* 974.

[Speaking of the manner in which the ligature acts in the suppression of hemorrhage, Mr. Cooper observes:]

Shortly after a ligature has been applied to an artery, the blood begins to coagulate, forming a clot, which extends into the artery both above and below the constricted part: this coagulation takes place with a rapidity pro-

proportioned to the diminution of the action of the heart, and is much retarded by any increase in the motion of the blood within the arteries. It occurs more rapidly in the vessels of the extremities than in those nearer the heart, and in small than in large vessels. The length of the clot depends upon the distance of the first large branch from the point at which the ligature is placed: the farther this is off, the longer will be the clot. The small branches leading off near the point of constriction are filled by the coagulated blood, which also often partly fills even larger branches, if these be situated near where the ligature is applied. The clot generally fills up completely the cavity of the constricted vessel, but is not adherent to it, excepting where the internal coat is injured by laceration, in which case the coagulum firmly adheres: it cannot, however, of itself oppose any permanent effective barrier to bleeding from the artery.

In the course of a short period, according to the size of the artery, in consequence of the irritation excited by the clot and ligature, vessels begin to extend into the coagulum from the capillaries of the contiguous coats, a plastic organized substance is then effused; the clot becomes smaller and lighter in colour; it adheres to the internal coat of the vessel, so that it can only be separated by force, and it now begins to assume the appearance and character of flesh. After a time, this organized structure, and the internal coat of the artery, grow completely together, and the danger of secondary hemorrhage is thus precluded. When a ligature is applied to a vein, the coagulum is not formed in the proximal but in the distal side of the ligature: all the other changes (which are similar) take place more quickly than in the arteries.

It must be borne in mind, that the application of the ligature, however dexterously the operation may have been performed, does not always prove efficient to the desired object, and the failure may depend either upon a want of constitutional power in the patient to form the plasma, or upon some physical condition which interferes with the formation of the clot. Indeed, as far as refers to the constitution of the patient, the same considerations would prevail here as in every other description of wound; but the surgeon must employ his scientific knowledge and judgment to obviate the physical difficulties that may present themselves. If after the application of a ligature to an artery, the clot should not be formed from either of the causes mentioned above, secondary hemorrhage would necessarily occur; and perhaps no case can be brought under the notice of the surgeon which offers greater difficulties than the suppression of these hemorrhages after the failure of a ligature. This fact was powerfully impressed on my mind at an early period of my professional career, in a case at Rotherhithe, in which I tied the external illiac artery of a gentleman. I experienced no difficulty in the operation, nor afterwards, until the twenty-second day, when I observed on dressing the wound, a small fungus-like granulation surrounding the ligature: from this a drop or two of florid red blood issued upon the slight pressure of the plaster placed to support the cicatrix of the external wound, which had now quite healed, with the exception of the opening through which the end of the ligature protruded.

The appearance of the excision about the ligature created great apprehension in my mind, and my fears were soon confirmed, for about 12 o'clock the same night, a messenger came for me, stating that a most alarming bleeding had taken place. I immediately accompanied him, but when I arrived the hemorrhage had ceased. I found that the cicatrix had given way, and the whole wound was now filled with a large coagulum of blood. I immediately sent for my friend and then colleague, Mr. Green, who had been present at the operation, and on consultation we decided that the turning out of the clot of blood for the purpose of exposing the lacerated extremities of the artery would probably produce a gush of blood that would at once destroy the patient; and as several cases are recorded where, under similar circumstances, the effused clot had itself by its pres-

sure upon the artery produced an inflammation competent permanently to seal the vessel, we determined to trust to the chance of this effect being produced. In this case, however, it failed, and the patient sunk from a recurrence of the bleeding. Upon a post-mortem examination, it was found that there had been no effort on the part of nature to close the vessel: not the slightest trace of clot was found either in the proximal or distal side of the ligature, which had come away at the first hemorrhage; and when a probe was passed up the vessel, it could be distinctly seen shining through the attenuated coats. In this case the mischief evidently arose from want of constitutional power, and I afterwards ascertained that the individual was in the habit of indulging to great excess in the use of wine and brandy; but this was not at all indicated by his general appearance. I of course treated him in the usual manner under such circumstances, but had I been acquainted with his habits, I should certainly not have wholly withheld his accustomed stimulus.

The precautions necessary upon the application of a ligature upon a large artery to prevent the liability to secondary hemorrhage from a physical cause, are—1. Not to place the ligature too near a large branch given off by the trunk to be tied; 2. Not to disturb, more than can be avoided, the surrounding cellular connection to the vessel: 3. To tie the ligature firmly, but not with a force sufficient to cut into the external coat of the artery, which would lead to the separation of the ligature before the adhesive process was sufficiently established; 4. To be careful in the mode of tying the knot in the ligature, so that it cannot loosen (that called the reef-knot is the best suited to the purpose); and lastly, the surgeon should not interfere with the ligature so as to hasten the separation, but patiently leave it to nature's own process. The period at which the separation will occur, will differ according to the size of the artery, and the peculiar constitution of the patient. An interference on this point is the more reprehensible, as all the statistical accounts of secondary hemorrhage prove that on their occurrence the danger is diminished in proportion to the length of time that has elapsed after the tying of the artery, and that few prove fatal after the lapse of between thirty and forty days; but notwithstanding all these precautions, the application of a ligature may prove abortive, in consequence of some abnormal distributions of the trunk upon which the ligature has been placed. *Med. Gaz. June 22, 1849, p. 1057.*

70.—ANEURISMAL VARIX.—By Bransby Cooper, Esq. F.R.S.

[Aneurismal varix, or a communication between an artery and vein, occurs, Mr. Cooper observes, not merely from accident, but may arise from disease, and may be found between any artery and vein lying in close proximity. Mr. Cooper remarks:]

An aneurismal varix, from whatever cause it may arise, may be recognized as a blue, circumscribed, pulsating tumour, lying in the course of a large arterial trunk. Upon auscultation, a distinct whizzing noise is heard at each systole of the heart; while a less distinct whizzing sound is distinguishable in the diastole when the tumour becomes comparatively flaccid. Pressure upon the artery above the tumour stops the pulsation, and the swelling becomes flaccid, but instantaneously re-fills when the pressure is removed. The swelling may be easily emptied by direct pressure upon it; the veins below the swelling are generally enlarged and tortuous, and the circulation through the artery impeded. The tumour rarely increases much in size, seldom exceeding that of a small walnut, unless much exertion is employed to which generally the patient has great intolerance, in consequence of the weakness of the limb, attended with more or less pain—inseparable concomitants of this condition.

The most frequent cause of aneurismal varix is the transfixing the vein

and wounding the artery behind it in the operation of phlebotomy. This accident is immediately indicated by a profuse rush of arterial blood gushing per saltum through the wound. The removal of the ligature placed on the upper arm preparatory to venesection does not check the bleeding, which can be stayed by compression made upon the wound by dossils of lint maintained in their position by bandages. I do not myself, however, consider this a good plan of procedure, as, in order to stop the bleeding, the bandages must be applied sufficiently tight to impede the circulation in the lower part of the limb, which causes swelling and pain, so that it is generally necessary to remove the bandage, when hemorrhage will be certain to recur. It is better, in my opinion, to apply a graduated bandage along the whole of the arm, commencing at the ends of the fingers separately and continuing it up to the shoulder, placing at the same time a compress upon the middle portion of the brachial artery with sufficient firmness to check, without stopping, the arterial current. Under these circumstances a tendency to coagulation of the blood is set up, and is further promoted by the patient being kept in the recumbent posture, with the arm elevated on a pillow, and kept constantly wet with cold water.

About four years ago, a young surgeon of my acquaintance, in bleeding a patient in whom the vein was immediately over the artery, opened the vessel with such precaution that a friend who was present at the operation said to him, "You'll never get half blood enough from that opening," and, taking the lancet from him, made a second puncture, upon which arterial blood gushed forth with great violence. The cautious operator immediately compressed the opening, but found it extremely difficult to prevent the flow of blood until the brachial artery was well compressed above. He then proceeded to bandage up the whole arm, commencing with the fingers separately, and filling up the bend of the elbow with lint, particularly placing a dossil of that substance over the wound, and, at the same time, placing a second compress on the middle of the brachial artery, to retard the flow of blood through that vessel. Under this treatment, the wound through the vein and artery perfectly healed, and this took place apparently without the obliteration of either vessel, as the pulsation was afterwards as distinct as is natural at the wrist, and the superficial veins retained their normal appearance. If this mode of compression fails, the communication between the artery and vein remaining permanent, the wound through the skin only having healed, an aneurismal varix is established, and will require further surgical treatment for its cure. Sir Astley Cooper, in speaking of aneurismal varix, says, "that no surgical operation is generally required in this disease, as it is not dangerous either to life or to the arm." Such may be the fact to those who have no necessity for the violent exertion of the limb; but to a poor man who has to gain his bread by his own exertions, such a limb would be totally incompetent, not only from its weakness, but from the danger arising from the tumour being exposed to external injury. There are two modes by which this abnormal condition may be removed, viz., either by tying the brachial artery in the middle of the upper arm, or by laying open the aneurismal sac, and tying the artery above and below the point of lesion. If the first operation be chosen, it may easily be effected by making an incision through the skin, two inches and a half in length, in the middle of the upper arm, on the inside of the biceps,—thus exposing the fascia of the arm, which is to be laid open to the same extent, when the biceps muscle is exposed, and is to be drawn outwards. The median nerve, brachial artery, and venæ comites, are exposed; the artery is to be separated from the nerve and veins, and, a ligature being passed around it, it may be secured in the usual manner. This operation does not, however, always succeed, in consequence of the free recurrent anastamoses between the radial, ulnar, interosseal, and inferior branches of the brachial arteries. I nevertheless believe that this operation would rarely fail if due precaution were taken to apply gentle compression

on the *fore-arm*, as before described, in addition to the ligature applied to the brachial artery.

Should the aneurismal varix prove, however, incurable by these means, the following operation may be had recourse to; but it is certainly a far more dangerous one, in consequence of the cluster of veins and nerves which are superficially placed at the bend of the elbow, besides the close proximity of the division of the brachial into the radial and ulnar arteries.

I have myself successfully performed the following operation, as have also my colleagues, Mr. Key and Mr. Morgan. The mode of performing the operation is as follows:—A tourniquet is placed upon the brachial artery, so as completely to compress it, and free incision is then made into the aneurismal sac, and the clot of blood being turned out, the interior of the sac cleansed by a sponge, the upper and lower opening of the artery into the sac is then to be sought for, and the end of a probe passed into the upper opening, to serve as a guide in separating the artery from the surrounding tissues; after which the vessel is to be secured. The same process is then to be repeated upon the distal end. This operation is frequently followed by constitutional irritation, and more so than the former operation, although it must be admitted that its effectiveness is far more certain.

Med. Gaz., June 22, 1849, p. 1063.

71.—ANEURISM BY ANASTOMOSIS.—By Bransby B. Cooper, Esq., F.R.S.

[Aneurism by anastomosis, or nævus maternus, as it is termed, when congenital, consists, as is well known, of a congeries of enlarged and dilated arteries and veins, which can be emptied of their contents by pressure, and gradually refill when the pressure is removed. Mr. Cooper considers the disease to be of an *atonic* character, dependent, not upon excessive action, but upon a defective condition of the coats of the vessel, arising from arrest of nutrition; so that the disease may be said to originate in the vasa vasorum. As to the treatment of this affection, Mr. Cooper says:]

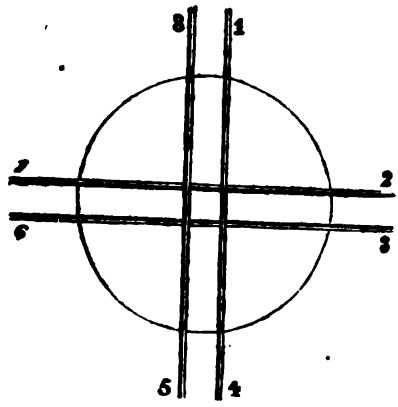
These tumours should be at the earliest possible period subjected to proper surgical treatment, as the danger and difficulty of cure are increased in proportion to the size they are permitted to attain. In infants the affection is generally congenial, occurring as nævus, and at first is so superficial and small in size, and differs so slightly from the surrounding parts in colour, that it scarcely possesses the physical characteristics of aneurism by anastomosis, and seems to be, indeed, a mere hypertrophy of the rete mucosum, being usually situated in the integuments of the face, neck, or some other highly vascular part. These spots sometimes disappear spontaneously, and if but small and not much raised above the skin, I have known them removed by merely keeping the surface constantly wetted with a strong solution of alum.

If this remedy prove effectual, it will be known by the nævus becoming hard and colourless, as if its blood had become coagulated: nitric acid is also sometimes employed, but it produces a slough, upon the separation of which there is great liability to hemorrhage, and as children bear the loss of blood very badly, I do not consider the use of this powerful agent safe. Pressure upon the cellular tissues surrounding the nævus is sometimes resorted to, the intention being to cut off the supply of blood to the part: the best way of effecting this is to make a plaster of Paris cast of the tumour, and when this has become hard, to bind it upon the part with sufficient force to prevent its receiving nourishment from the surrounding vessels: as the size of the tumour decreases, thin layers of lint must be placed in the plaster mould, to enable the pressure to be kept up; but this plan of treatment can only be adopted when the swelling is situated over bone, as in the scalp; and many years ago I remember a case being thus successfully treated by

Mr. Hodgson, of Birmingham, who then lived in London. I have twice adopted this plan, but unsuccessfully, and was obliged to proceed to other means. Injections into the erectile tissue are sometimes employed: weak solutions of iodine, corrosive sublimate and alum, have all been used, and with success. I have myself several times injected nævi with a saturated solution of alum, as in the following case:

A child of a poor woman, about six months old, was brought to me with a nævus near the ala of the nose, extending to the corner of the mouth: it was prominent, compressible, the skin of a strawberry red colour, and the growth of the tumour had been very rapid. I procured a "lachrymal duct syringe," and making a very small opening in the healthy skin, close to the circumference of the tumour, injected half a drachm of the solution of alum into the erectile tissue: the colour of the skin was immediately changed to a blue or slate colour. I desired the surface to be kept constantly moist with a solution similar to the one I had injected, and the disease was soon entirely removed without a single bad symptom. Mr. Longmore, jun., sent me a case of nævus, in the side of the cheek, which I treated with vaccine matter,—a plan which has been found to prove effectual in curing this disease—the treatment proved, however, unsuccessful in this case, and I injected the tumour with alum, and treated it as in the case described above, with complete success. In several other cases I followed the same plan with the happiest results; in all these, with one exception, the nævi were on the head and face, and that was in the arm. After this series of successful cases, I was consulted by the wife of a man in Suffolk, whose child had a large nævus on the inner side of its thigh; the tumour was very compressible, and communicated a more than usual thrilling sensation, as the blood was circulating through the tissue. With the confidence inspired by my former success, I proceeded to inject the tumour with a solution of alum as before described, but employed a larger syringe, in consequence of the greater size of the tumour. The child did not at the time appear to suffer more than is usual in such cases, but towards the evening of the day of the operation I was sent for, in consequence of its excessive uneasiness. I found it suffering under a high degree of irritative fever: the thigh was much swollen and inflamed. I immediately ordered a dose of calomel and antimony, and applied fomentations to the limb; but for three or four days the child remained in the most imminent danger. The aneurismal swelling then sloughed, and a deep and extensive wound, was the result; but the child's powers of constitution carried it through both the acute attack and the protracted process of reparation. I have no doubt that in this case the injected fluid became immediately mixed with the blood, and reacting upon that fluid, either produced some change in it rendering it unfitted for the purposes of life, or otherwise inflammation in the veins, termed phlebitis. I have never since ventured upon the repetition of this operation, and am now, upon mature consideration, more surprised at the fortunate termination of the former cases, than at the result in that last described; for what can be more likely to lead to extensive constitutional mischief than the probable immediate introduction of a powerful chemical agent into the blood? I have therefore decided upon never again venturing upon injection where the nævus is of large size.

Mr. Cooper does not appear to approve of the plan of excising nævi; which he thinks dangerous on account of the hæmorrhage which may follow. He thinks the application of a ligature to be the proper method of treatment. If the tumour is small, two needles may be passed through its base at right angles to each other, and a ligature tied tightly round them: as the tumour ulcerates, the ligature will become loose, and must be replaced by another. But in the case of large nævi a different method is to be practised.]



The late Mr. Diston always employed, and I think first proposed, a most ingenious arrangement of ligature for the constriction of large nævi; in this operation the tumour is first raised as completely as possible from the subcutaneous structures; a long needle fixed in a handle, but without a ligature, is then passed through its base below the diseased tissue; a second needle, threaded with a double ligature, is passed in a similar manner, but at right angles to the first; the first needle is next threaded, and both then withdrawn, leaving the ligatures in the tumour; the loop of each double thread is next cut, so that four single threads now cross the swelling, each with two free extremities. (see Fig. in which the extremities are numbered for reference.)

In securing this system of ligatures, extremities 1 and 2 are first tied, without being tightly drawn: 3 and 4 are next tied, 6 being held by an assistant to prevent its being drawn through; 5 and 6 are then secured, 8 being held; and finally 7 and 8 are tied as tightly as possible, and as they command all the others, the degree of constriction depends entirely on the manner in which they are secured.

I have myself employed this ligature in four or five cases, and am convinced by experience of its great utility. *Med. Gaz., May* 25, 1849, *p.* 894.

72.—TREATMENT OF NÆVUS BY A SOLUTION OF IODINE.—By Dr. J. O. Bulteel, Plymouth.

[Dr. Bulteel has used with the most satisfactory result, a solution of iodine ℈j., in sp. vin. rect. ʒss. He says:]

The preparation was applied freely once every day, not exciting the slightest constitutional derangement, and the disease every two or three days scaling itself, if I may use the expression, and thus disappearing *gradatim* till nothing more could be seen but two little spots of the size of a pin's head. The application at once arrests the growth of the nævus and nothing but a regular daily application is needed for its final removal.

Med. Gaz. Aug. 24, 1849, *p.* 319.

73—EFFECTS OF CHRONIC ARTERITIS.—By Bransby B. Cooper, Esq., F. R. S.

[One of the most common effects of chronic inflammation of arteries is thickening of their coats, which by impairing their elasticity, is no doubt a frequent cause of rupture of the inner coat, and the consequent formation of aneurism. Further:]

A thickening of the valves of the aorta, in all probability proceeding from chronic inflamation, is very frequently met with; they are sometimes converted into a kind of ligamentous tissue, and thus become completely unfitted for their original important office. This thickening sometimes goes on to such an extent as to create wart-like excrescences, which Corvisart terms "vegetations."

Chronic inflammation sometimes produces atheromatous deposits between the internal and middle coats of an artery, forming projections into the canal so as materially to interfere with the flow of blood through the vessel.

It has lately been proved by means of the microscope, and by chemical analysis, that these morbid growths consist of fatty matter, and therefore steatomatous deposit would perhaps be an appropriate term for the disease. The obstruction offered in this disease to the circulation of the blood often produces distension of the vessel above the deposit, and in some cases becomes an exciting cause of aneurism. These deposits are not by any means uncommon, as the numerous preparations in our hospitals serve to prove; its diagnosis during life is very difficult, unless it be situated where auscultation can be employed in the investigation, as in the aorta; in that case a bruit would be present from which the true cause of the obstruction could generally be conjectured.

Bony deposits also frequently result from the effect of chronic inflammation; and, indeed, this deterioration is so common in the arteries of old people that it must be regarded, properly speaking, as a change inseparable from senescence, and not as disease. The cause of this action is probably to be traced to a diminution in the power of the capillaries of the bones to eliminate phosphate of lime from the blood: an undue quantity of that earthy matter being therefore carried into the circulation, it is deposited in the more vital parts of the system. Under certain diseased conditions young persons are liable to the formation of these deposits of bone-earth, or ossification of arteries as it is termed.

A frequent result of ossification of the arteries, especially when it occurs in the lower extremities, is sphacelus of the limb, in consequence of the imperfect nutrition which the rigid arteries are capable of supplying to parts distant from the heart; it is therefore very desirable to prevent wounds of the toes or extremities in old people, and also to maintain, by topical means, the normal temperature in the limbs. Ossified arteries are liable to disruption; the vessels of the brain sometimes give way under these circumstances, inducing coma, to which, I think, the term "senile apoplexy" may be aptly applied.

The presence of ossification of the arteries may be diagnosed, particularly in old people by the irregularity of the circulation, and, when the vessels of the extremities are affected by the tangible rigidity of the diseased vessel. Ossification of the coronary arteries of the heart produces a train of symptoms which constitutes the well-known disease termed "angina pectoris." Gouty and rheumatic diatheses seem to be especially liable to morbid depositions in the arteries; it is therefore highly important, in acute attacks of rheumatism or gout, to entirely subdue the specific action as early as possible, so as to prevent it from passing into the chronic form, under which there is always considerable tendency to the various depositions I have described, all of which are more or less likely to produce aneurismal dilatation. *Med. Gaz., May 26, 1849, p. 983*

74.—OPERATION OF TRANSFUSION OF BLOOD.—By Dr. C. H. F. Routh, Physician to the St. Pancras Dispensary.

[Dr. Routh has collected together all the recorded cases in which transfusion was performed, and from these data has come to conclusions very favourable to the performance of the operation. After enumerating the cases, he observes,]

From this list we conclude—1st, That the operation is one of the safest major operations which may be practised in surgery.

The total number of cases here given are 48; the number of deaths, 18; giving a rate of mortality of 1 in 3—rather less than that of hernia, or about the same as the average of amputations, according to some authors. A very little consideration, however, of the table will satisfy us that the average is too high. In all these 48 examples, it is true, the operation of transfusion was performed, but in some inadequately, and in others, where there

was no reasonable hope of deriving any benefit from it. In other of the cases, death was certainly due to other causes than the operation.

1. In cases 5, 6, 12, and 16, the patients were *already dead* when the operation was performed. 2. In case 8, as will be more especially noted in the sequel, enough blood was not transfused 3. In cases 7, 9, 15, 21, and 48, there was other mortal disease present: so that, although at first some benefit resulted from the operation, this good effect was but transitory. 4. In case 44 the operation was unfortunate, air having been inadvertently admitted into the veins. And lastly, in cases 45, 46, and 47, the same objection applies as in case 8.

Thus, out of these 18 deaths, we have only 4 in which death can be reasonably attributed to the transfusion, i.e., out of 34 cases in all we have only four deaths, or 1 in 8½.

This result, however, is scarcely correct, though it accords with that obtained by Mr. Peet. This gentleman, in a paper read before the University College Medical Society, now unfortunately lost, but an abstract of which appears in the Lancet, (1842,) came to the following conclusions. He collected 35 cases where transfusion had been performed. Of this number 13 died—an average mortality of 1 in 2·7. But he also remarked, that this result was incorrect, as among the fatal cases in 3 only could death be referred to a failure of transfusion, giving thus a total of 25 cases, of which 3 only were fatal, or 1 in 8·3. I do not think, however, that the four first cases given in the Table should be included in this average. The accuracy of the record of these may and has been disputed; but, moreover, as the operation in these cases, excepting in the last, was not performed upon diseased persons, the facts only go to prove that transfusion, and that even with the blood of animals of a different species, may sometimes be practised upon comparatively healthy persons with impunity. Excluding, therefore, these 4 cases, we have 30 cases, of which 2 only were fatal, or 1 in 10. This is a highly favourable result; more so, indeed, than that obtained in the other major operations, if we except that in lithotomy, obtained by Sacerot.

2. In reference to the diseases in which the operation has been performed. *a.* In uterine hemorrhage. The result is very flattering. It was performed in twenty-four such cases. In five the patient did not recover. In one only, however, could the operation be reasonably stated to have failed. In two cases (Nos. 5 and 12) death had already occurred. In one (8) sufficient blood could not be obtained. In another (44) air was accidentally admitted into the vein. In one only the benefit produced was transitory, and it failed (35.) In four cases the hemorrhage was secondary, coming on and continuing for some days after delivery. In all these it proved successful. (Cases 13, 34, 41, 48.)

In 2 cases the operation was performed before labour, and in both with a happy result. *b.* After surgical operations, transfusion was performed 7 times (6, 20, 21, 28, 22, 36, 42), in three cases only proving fatal (6, 20, 21.) In two of these fatal cases, however, (6 and 21,) death is accounted for by other causes. In both these cases the operation was performed for secondary hemorrhage. The absence of a post mortem in case 20, prevents the same conclusion in regard to the cause of death being stated with any degree of certainty. *c.* It was twice performed in the state of exhaustion following continued dyspepsia. In one it was fatal, but the post mortem here revealed organic disease, scirrhus of the pylorus. The other case was certainly cured by the operation. *d.* It proved successful in one case, under the most unfavourable circumstances. In a case of phthisis, with violent hæmoptysis; and this is the more interesting, as the blood of a *ram* was the fluid used in this case. The quantity, however, transfused was small, only 6 oz. It is, however, a fact of some interest; the more so, if taken in connexion with the cases 1, 2, and 4, where sheep's and calf's blood were employed; and must be looked upon as an instance of the power of the "*vis medicatrix naturæ*," where a patient got well in spite of the re-

medies employed, or as confirmatory of Dr. Harwood's experiments, and opposed to those of Drs. Blundell, Dieffenbach, &c. *e.* It proved of no avail in one case of hydrophobia, and another of asphyxia. *f.* It proved fatal in 3 out of 4 cases of Asiatic cholera. In the 4th it probably exerted a beneficial effect: probably that effect might have been permanent, but for the existence of other organic and mortal disease. In the other 3 cases, the quantity transfused was insufficient. In cholera especially, where the amount of fluid that runs away by the bowels is so great, we should expect *a priori*, that no advantage could be derived by the transfusion of a small quantity; the more so, as in those cases where injection of saline substances has been tried, as much as 100 oz., and 120 oz., and even upwards, have been transfused, with the best effect.

This view of the case obtains apparently confirmation, from a simple review of the history of the four cases in which it was tried. Life was prolonged in proportion as the quantity injected was large. In case 45, 1½ oz. only were injected. He died in six minutes after the operation. In case 47, 2½ oz. were injected; the patient died two hours after the operation. In case 46, 6 oz. were injected; the patient died in six hours after the operation. In case 48, 30 oz. were injected, and death resulted in sixty-six hours. In the two last cases, (46 and 48,) in the first, the cholera symptoms did not recur; in the last they were overcome. The injection of larger quantities in cholera derives further confirmation from the following calculations.

3. As a rule, the quantity injected, where transfusion is practised, should not be under 7 oz. It is admitted, that a lesser quantity may, and has been successfully transfused. Thus, in seven cases in the table, a cure followed under these circumstances:—

In case	22 there were transfused	2 oz.
"	23	2
"	28	5
"	37	6
"	38	4
"	39	4
"	40	4

Mean 3·8 oz. Say 4 oz.

But, on the other hand, where the quantity transfused before any symptoms of rallying took place, is distinctly stated in the table, we have the following result:—

In case	10 there were transfused	6 oz.
"	11	6
"	13	6
"	17	8
"	19	5
"	26	8
"	28	5
"	31	12
"	40	4

Mean 7·0 oz.

Thus it is, that we explain the failure of the operation in case 8, 45, 46, and 47, a sufficient quantity not having been transfused. This result is still more certainly brought out in another table, where the fatal and successful cases, and the quantities tranfused, are opposed for the purpose of making this more evident, arranged in separate columns, beginning with the smallest mean quantity transfused in successful cases, one column being set apart for every additional 4 oz. up to 16. In this table, the 4 first cases and the 4 cases in which death had already occurred, when the operation was performed, are excluded:—from which it appears, that the greatest proportional number of successful cases are those in which a quantity of not less than 12 oz., or more than 16 oz., was transfused; the number of successful cases proportionally increasing up to this limit, and then diminishing again, giving a mean of 14 oz., as the quantity to be transfused.

The same result is brought out, though more generally, if we arrange these series of cases in two classes only; the one, where the quantity transfused was under 12 oz., and the other where it exceeded this number: *i.e.*, we have in the former class 8 deaths, with an average of 5·3 oz. transfused, and 14 recoveries, with an average of 5·9 transfused, or 1 death to 1·7 (or nearly 2) recoveries, and in the latter class we have 3 deaths, with an average quantity 20·1 oz transfused, and 9 recoveries, with an average 16·5 oz. transfused, or 1 death to 3·2 recoveries. From which we think it follows, that, as a rule, the quantity transfused should not be less than 6 oz. nor more than 16 oz.

4. In regard to the age of the patients in which this operation was performed, the data are insufficient in the fatal cases. In the 16 successful cases in which the age is given, the mean age: was 34·8. In three cases the age was under 30; in 4, under 35; in 5, under 40; and in 3 under 42.

5. The danger of the operation is certainly not great. Among the successful cases, phlebitis, which *a pciori*, we should most fear, occurred in only one case, case 37, where the blood was taken from a *ram;* but even in this case it was easily overcome. In the only three cases where we have seen, after transfusion, death followed (cases 20, 35, and 36), the operation could only be said to have failed to cure, but not caused death; and even in one of these, (case 20) Dr. Blundell expressed an opinion that there was some other latent cause of death.

6. In regard to those diseases in which this operation might be performed, I think there are many in which, by reason of a mistaken timidity on the part of the practitioner, it has not been practised; and where the probability is, that if the contrary course had been pursued, life might have been spared. Too much hardihood is certainly very blameable, but timidity is scarcely less so. The misfortune is, however, that death might be frequently improperly ascribed to the operation, if it failed, and more especially, as it might be improperly performed. With the state of public feeling, therefore, it can at present only be resorted to in extreme cases. We can, therefore, only speak of it as applicable in those diseases where collapse is present or imminent.

From the table we learn that out of the 18 cases in which it failed or proved fatal, (in 5), other organic disease was present. In only 2 cases where there was or had been organic disease, did it prove successful. While, therefore, these figures do not absolutely forbid the employment of transfusion in organic disease, they very much discourage it. Common sense would necessarily contra indicate its practice, especially in diseases of the lungs or heart.

But, first, in all cases of collapse induced by hemorrhage, whether primary or secondary, it should always be employed.

Secondly. In that state of extreme exhaustion from dyspepsia, where collapse is imminent, it might be advantageously employed. There are many cases in which dyspepsia has persisted for a long time, and perhaps been neglected, and where, notwithstanding, no organic disease can be detected; in which no food can be retained on the stomach, and the remedies employed are powerless. Here the patient will sink from inanition, if something is not done. In these cases it is highly probable, that were the operation more frequently resorted to, life might often be saved. Dr. Blundell kept a dog alive three weeks, by consecutively transfusing the blood of another dog in his veins. It is true, in this case the animal lost weight, and was evidently thinner at the end of the time; but the operation, once performed in a full and effective way, might enable the patient to rally, so that other remedies might subsequenlty have effect.

Thirdly. In some cases of stricture of œsophagus, where no food can be taken, to give the patient time to rally, so as to admit the introduction of bougies subsequently.

Fourthly. In the collapse which follows long-continued fevers, more es-

pecially those of a typhoid character, produced frequently by supervening diarrhœa, or by the crisis of the disorder. It is exceedingly probable, transfusion here might be most advantageous. In that variety of Irish fever, so fearfully fatal, and where the crisis is marked by excessive perspiration, in the exhaustion that invariably follows, and from which the patient so seldom recovers, it might be successful, giving the patient time to rally; for then the digestive organs are too often too slow and too weak in their operation to act with effect, whereas a sudden change in the quality and richness of the blood would probably save the patient. But even after the crisis, in a more advanced stage of the convalescence, death not unfrequently results, after a continued fever, from progressive weakness, and here transfusion might probably effect a cure.

Fifthly. In the collapse, or great exhaustion, following dirarrhœa, dysentery, and cholera, where the use of injections especially would be contra-indicated, or unless, it might be, probably, advantageously employed. Among children especially, diarrhœa is a very common cause of death, from the mere exhaustion which it produces, although, it is true, in some of these cases, there may be organic disease, which would neutralize the good effect of transfusion; but even in these cases sometimes, it might do good, by giving time for subsequent and successful treatment. The same remarks apply to the exhaustion after sporadic cholera. In many of these cases, fatal syncope is at once induced by the patient raising himself in bed, even after all the active symptoms of the disease have subsided, denoting great weakness, which might be effectually combated by transfusion.

Lastly. In Asiatic cholera. In the state of collapse, whether by reason of the nervous shock induced or not, we can trace two, at least, efficient causes. 1. Diminished fluidity of the blood, produced by the violent watery purging; but 2. It would seem, from the non-secretion of urine and bile, that some essential vital principle in the blood (necessary for the stimulation of that part of the nervous centres connected with these organs, or the particular nerves of the organs, or with their secreting cells themselves) is either so removed, or so changed in kind, as no longer to produce this stimulating effect. That it is not always so removed, is proved by the fact, that the transfusion of saline substances has sometimes cured the disease; but that it is frequently so, is also proved by the frequent failures of this mode of treatment. If this view be correct, to restore this principle becomes the first indication in the treatment. We do not know what it is. But the transfusion of blood, which, as blood, does contain this principle, would seem the best calculated to fulfil this indication

In the four cases of cholera given in the table, we have some confirmation of this view. In cases 45 and 47, the quantity transfused was too small to produce any change. In Case 47, where six ounces were transfused. life was prolonged six hours; and in Case 48, where thirty ounces were transfused, the choleraic symptoms disappeared, bile being secreted, and life prolonged sixty-six hours. It is impossible to ascribe, upon the evidence of one case, these amendments to the transfusion. More experiments are required, but the coincidence is interesting.

The objections to transfusion in Asiatic cholera seem to be twofold. 1. The difficulty of obtaining a sufficient quantity of blood. In the cases treated and cured by transfusion of saline substances, as much as 100 to 320 oz., and upwards, were sometimes injected. To inject this quantity of blood would be impossible, but it is probable a smaller quantity of blood would suffice; and if not, the transfusion of blood might be combined with the transfusion of saline substances, the one operation preceding the other.

2. The second objection is the fear of contagion; but, even here, kind friends will be frequently found willing, at any risk, to save the life of a relative; and here we must depend upon the feelings and affections of others. How far these theoretical suggestions are correct or false, can only be proved by further experiments. The dreadful havoc now produced by the cholera on all sides must be the excuse for their promulgation.

Sixthly. It remains only now to add a few words on the method of performing the operation itself, and I cannot better do so than in quoting the very words of my friend and colleague Mr. Walton, who has kindly furnished me with the following remarks on the subject:—"The operation may be executed in three ways—1. By receiving the blood in a vessel, and allowing it to enter the body by gravitation. 2. By interposing a tube between the blood-vessels of the emittent and recipient persons, and trusting to the force of the circulation for the transmission. Both these methods have given place to the 3rd or injecting process, which is effected by the stop-cock stomach pump; but, instead of the tube through which the pump would be filled, there is a funnel shaped basin to receive the blood. Much nicety is required in its make.

"So little is the the theory of transfusion understood by instrument-makers in general, that instruments are made and sold for the purpose that are wholly inapplicable. Mr. Coxeter furnished me with mine. Mr. Ferguson, of Smithfield, has produced the most perfect one that I have seen. The basin should be cased like a hot plate, that it might contain water. The piston should fit accurately, and at the same time work freely. I think that an interruption by some elastic material in the tube that is to convey the blood, is advisable, for then the pipe that is inserted into the vein is less likely to be disturbed by any motions which may arise in the working of syringe or movements of the patient. At least three persons are required for the safe and efficient performance of the operation, and their attention should be wholly given to it. Supposing everything ready, the instrument quite clean, air-tight, and thoroughly warmed, the basin filled with hot water, a vein in the patient's arm should be punctured, and the finger applied to the orifice till the tube is ready to be inserted. It is quite unnecessary to dissect out a vein, and place a probe under it before making the puncture, as has been recommended. A vein in the arm from which the blood is to be taken, is next to be opened by a fine cut, and the stream directed into the centre of the basin, the arm being held close to it. When sufficient has entered, the syringe should be filled, and the piston pushed in a little till blood flows at the end of the pipe, which is then to be introduced into the vein. The injector now works the syringe till the desired quantity has been thrown in. There should be no cessation to the stream of blood entering the basin till the operation is ended, so that after each occasion of the syringe being filled, there may be at least an ounce of blood at the bottom of the basin, or else air would probably be sucked in. It will be perceived that I have given merely a hasty sketch, but sufficient, I think, to guide those who have no experience in the operation. The accident to guard against is the transmission of air. The greater facility with which this is likely to occur when transfusion is performed through the jugular vein, points out the impropriety of selecting this vein for the operation. It would be worse than useless to attempt to transfuse unless an expert bleeder be procured. Much of the success of the operation depends on the despatch, as well as the steady and uninterrupted course that is pursued; for, with the disadvantage of the blood travelling over dead surfaces, very little exposure of it to air must be apt to destroy vitality.

The above account has been given, as the subject of transfusion is usually excluded, in works even of Practical Surgery, although much simpler operations are treated in detail. Even Cooper's Dictionary 'is silent on the subject.'"

Med. Times, Aug. 1, 1849, p. 144.

ALIMENTARY CANAL.

76.—ON THE EXTRACTION OF FOREIGN BODIES FROM THE ŒSOPHAGUS.—By Professor Dieffenbach.

Foreign bodies observe in their transit certain *stations* at which they

halt; thus, in the pharynx behind the thyroid and crycoid cartilages, in the beginning of the gullet, or at its lower end, close to the diaphragm or cardia. They seldom stop at the middle of the gullet. If very large, they may cause suffocation—thus a large piece of meat, a hard boiled egg, a pear, a chestnut, have each proved fatal. Guattani witnessed the most frightful death ensue from a chestnut: the part of the gullet at which it stuck was gangrenous. Spiritus saw the same result follow the swallowing of a five-franc piece, which perforated the gullet above the cardiac orifice. Needles, inadvertently swallowed, pierce sometimes the gullet or stomach, advance by the aid of suppuration or otherwise towards the surface, and either escape spontaneously, or through incision. Lyson observed a case where three needles that went in at the mouth came out at the shoulder; I have known one issue at the arm.

The procedure must be modified according to the nature of the substance. None but a bungler would attempt to disgorge a piece of meat sticking at the cardiac opening, or urge on a fragment of glass from the gullet into the stomach. External pressure will suffice for potatoes or plums when stuck in the throat.

For the withdrawal of needles, fish bones, and the like, there is no better implement than a large goose or swan quill feather, with the barbed portion ruffled, and imbued with oil. The patients sits with his head leaning upon the breast of an assistant, while the surgeon lowers the tongue, then introduces the feather, with its concave side downwards into the throat, turns it rapidly round, and draws it out. The popular practice of swallowing a crust of bread is sometimes availing, but may also increase the peril when arrested above the bone. A sudden slap on the back is by no means a bad plan, when the substance is large and obtuse. It is preferable to that of setting the patient on his head, as was done in the instance of Mr. Brunel to promote the expulsion of the half-sovereign piece.

The principal instruments employed for the present purpose are of the description of forceps. Dupuytren advises, as a preliminary step, the introduction of a gum elastic tube, surmounted with a silver ball, in order to ascertain the position of the foreign body. This, however, is superfluous, and will tend, moreover, to augment irritation. Cooper recommends the forceps of Weiss. The so-called leaden hammer of earlier writers consisted of a lead ball attached to a string, which was let down the throat and pulled up again.

Mesnier's lead hammer was of an olive shape: Petit's was equipped with a wire instead of a string. Petit used besides a metal noose fastened to a whalebone stem; Fabricus Hildanus a many-holed silver tube provided below with a sponge. The double ring of Graefe attached to the end of a rod of whalebone with a steel spring, is very convenient for taking pieces of money out of the throat. The customary instrument, termed *repoussoir*, or probang, namely, a bit of sponge as big as a walnut stuck to the end of a whalebone, is generally useful, either for entangling fish bones and the like, or propelling large round substances. My own procedure is as follows: if the body be small and sharp, I employ the oil feather above described. An oiled wax taper, passed down to the cardiac orifice, has proved serviceable; for, as soon as withdrawn, the body has been rejected. If the body be large, as a portion of flesh meat adherent to a fragment of bone, I use a lithotrite with an imperforate scoop, and rather straight. The instrument is introduced with the blades closed, until it arrives at its destination, when these are to be separated sufficiently to grasp the substance, and after a few gentle turns, withdrawn.

When there is impending suffocation from the presence of the very large bodies impacted in the throat, Habicot enjoins tracheotomy before resorting to opening the œsophagus, I have never been compelled to this extreme measure. The most difficult thing to deal with are sets of false teeth when swallowed. I once relieved an old lady in this predicament by means of

my fingers. On several occasions I have removed, with curved polypus forceps from three to four teeth attached to a gold plate, and which got accidenty all into the throat; once, by the aid of an emetic, as a last resort, a set of four teeth very deeply located.

In all these operations, the patient is to be in a sittiug posture; the head properly supported, the mouth rinsed with tepid water, tepid water mixed with white of egg taken as a drink, and the instrument smeared with white of egg rather than with oil. *Med. Times, July* 28, 1849, *p.* 78.

76.—ON PETIT'S OPERATION FOR STRANGULATED HERNIA.—By H. Hancock, Esq., Surgeon to Charing Cross Hospital.

[Mr. Hancock is opposed to the practice of operating for hernia without opening the sac. He thinks that it is proved that the mortality after operations for hernia generally depends upon causes entirely independent of the operation, that opening the sac does not increase the danger, and that, therefore, as presenting considerable advantages, this practice ought, as a general rule, to be adopted. He observes:]

It has been urged by the advocates of Petit's operation, that by its adoption, we avoid the following dangers, viz:—Peritoneal inflammation, consequent upon the exposure of an inflamed or strangulated portion of the bowel, which, according to Key, is the cause of death in the majority of cases. Hemorrhage into the cavity of the abdomen, should a vessel be wounded. Risk of wounding the intestine. Rupturing the bowel, by drawing it down from under the stricture, as sometimes arises from an ulcerative process induced in the bowel by the pressure of the edge of the constricting band, which accident cannot attend the division of the stricture on the outside of the sac. Opening the sac, and thereby laying bare the peritoneal cavity of the abdomen. Immediate manipulation of parts so important to life: and, according to Gay, inducing unhealthy processes in the external wound. Exposure of a portion of bowel, possessing feeble powers of resistance to the morbid influence of air, light, &c., giving rise to fatal inflammation and organic changes, not present at the time of operation. Extreme prostration speedily followed by death, in cases where great depression of the powers is observed to precede the operation, without any other obvious cause than the exposure of the bowel. Danger of disorganization, from exposure of contents of hernia bruised by the taxis. Small collections of pus, at the mouth of the sac, after the operation for opening the sac.

[Mr. Hancock believes that by exaggerating the danger of these circumstances, many have been led to delay the operation beyond the proper period, and to use local and general measures, which do more harm than good. He states that peritonitis is a comparatively rare cause of death after hernia operations, and that there is much less danger incurred by cutting the peritoneum than is generally supposed. Mr. H. says:

The history of strangulated hernia proves, by every day experience, that the peritoneum may be cut with impunity. I am willing to admit that, if we cut or irritate healthy peritoneum, we may induce peritonitis, although even this does not always occur, but if we cut inflamed peritoneum, the inflammation does not necessarily increase, especially when that inflammation results from some exciting cause, and by our incision we remove that exciting cause. Our incision thus becomes a relief to the patient, whereas, when made in healthy peritoneum, we inflict a violence on the part.

I believe, and I am supported in this belief by the observations of Sir C. Bell, that we may cut diseased peritoneum with greater impunity than healthy. The abdominal sections for ovariotomy prove this; the removal of large portions of omentum proves it; the operations for paracentesis abdominis prove it; and the success which attended my case of cœcal dis-

ease tends to prove it. Again: is the general peritoneal cavity laid bare by opening the sac?

It must be remembered, that the communication between the sac and abdomen is completely closed by the protruding gut or omentum, and that, even when the intestine is returned, it usually lies so close to the ring, that very little, if any, air can penetrate the abdominal cavity, even if it should be injurious, of which I have great doubts, having had patients who, from wounds, have had the abdominal cavity exposed for a much longer time than would be required for the operation for strangulated hernia, and who have recovered without any urgent symptoms; and, moreover, Key's own observations negative this position, inasmuch as he says, "In tracing the inflammation consequent upon the operation for hernia, it is found to spread from that portion of the bowel that has been strangulated, over the peritoneal surface of the intestines, and not to have its origin from the incision in the sac, although two wounds are usually inflicted upon it. The peritoneum, about the seat of stricture, exhibits fewer signs of acute inflammation than the investment of the bowels"—a conclusive proof that the danger and inflammation result from the violence inflicted on the gut itself, by the strangulation, and that opening the sac, and thereby laying bare the abdominal cavity, have literally nothing to do with the fatal termination; for Key admits that the inflammation does not emanate from the peritoneal sac, although two openings are made in it; also, that the peritoneum at the seat of stricture, exhibits fewer signs of inflammation than the investment of the bowels, although this portion of peritoneum next to the sac would be the most exposed to the influence of light and air: and, besides, if laying bare the abdominal cavity exerted any influence, it is right to assume that the peritotonitis would be generally diffused over the whole peritoneal surface, and not confined to the constricted intestine.

Mr. Lawrence and Mr. South differ from Monro and Key as to the influence of air, light, and handling, in producing fatal inflammation and organic changes not present at the time of operation, and assign such pathological changes to the pressure of the stricture which affects the parts, not like the slight violence of the operation, for a few minutes only, but uninterruptedly for hours.

Cases certainly occur "in which the patient appears to be doing well after the operation, but after the lapse of two or three days the powers begin to sink; the abdomen, though not very tense, is uneasy under pressure, the pulse small and quick, and the tongue becomes coated; this condition is perhaps protracted for several days, and the patient at length dies. A post mortem inspection discovers the cause of death in the dark colour and lacerable condition of the strangulated portion of bowel, and the vascular state of the surrounding parts;" and we are told, that "this unexpected termination usually takes place in patients of enfeebled constitution, whose powers are unequal to the restoration of the healthy circulation in the strangulated bowel after its release from the stricture, and in whom, therefore, a slight degree of inflammation gradually ends in the extinction of its vitality; at the period of operation, the intestine, when exposed, presents none of the usual indications of present or approaching gangrene; no infiltration of its tissues; no discoloration beyond that which retarded circulation in a healthy bowel produces: no lack of peritoneal lustre, and no lacerability of texture. It in no point appears to differ from those cases of strangulation in which an early operation is had recourse to before severe symptoms come on, and in which a favourable prognosis is verified by a rapid convalescence. Exposure of a portion of bowel possessing such feeble powers of resistance to morbid influence cannot but tend to increase, probably to excite, a disposition to inflammation, which, though low in degree, is sufficient to destroy its vitality, and it may therefore be fairly regarded as the main agent in the production of gangrene."

I quite agree as to the occurrence of such cases, but certainly not with the deductions advanced. If the gangrene of the gut were really due to

the cause assigned, would not such cause and effect more quickly and uninterruptedly succeed each other?—would the patient appear to be doing well after the operation?—would the evacuations be free and natural, and the pain and sickness cease, for the first two or three days? In some instances, where the patient has been almost collapsed when the gut has been so much injured as to render it doubtful whether it any longer preserved its vitality, as in Sir A. Cooper's case, such almost lifeless intestine has been left exposed in the wound, the stricture being divided, and the exposure, so far from destroying the patient, has been followed by complete success, the gut recovering its almost suspended vitality, and the patient ultimately doing well. The fatal terminations may, I believe, be much more correctly ascribed to the purgative medicines administered, both before and after the operation; the gut has been subjected to violence, from the constriction, almost too great for its power of restoration, but in consequence of the continued irritation kept up by the purgative medicines, the feeble efforts at recovery are overcome, and mortification is the result.

Lancet, July 21, 1849, *p.* 92.

[Mr. Hancock gives a letter which he received from Sir John Fife, of Newcastle-on-Tyne, in corroboration of some of his opinions. Sir John says:]

"When a student, I saw three cases of hernia, in which the ordinary operation was apparently well performed, but each of these three cases terminated fatally, and in each a post mortem examination demonstrated intestinal obstruction from adhesions, agglutinating opposite convolutions, or otherwise narrowing the calibre of the intestine. These cases made a strong impression upon my mind, and since that time I have operated many times a year for more than thirty years, and I have never considered my operation satisfactory without passing my finger through the peritoneum into the abdomen, and ascertaining that the intestine was free within.

In 1831, while accompanied by Dr. Foster, surgeon to the 4th Dragoon Guards, Mr. Parr, and many other gentlemen, who came to the Newcastle Eye Infirmary to see some cataracts extracted, I was summoned to operate on a poor woman at a short distance, who had been in danger from strangulated femoral hernia for three days; fortunately those gentlemen accompanied me. The operation was apparently completed in a few minutes; but on passing my finger into the abdomen to assure myself that the intestine was free to perform its functions; I felt it bound down to the sheath of the iliac artery by a strong adhesion. My companions then examined, and were satisfied of the fact. They were aware of the necessity of dividing the adhesion, and also of the extreme hazard of the step. The finger nail was tried in vain; at last I introduced a bistoury with great caution. The intestine was fixed, but the gush of blood that followed was such as to leave no doubt of the catastrophe that had occurred. I pressed my left forefinger on the iliac through the wound; with the other hand I enlarged the external wound upwards and outwards, and was soon enabled to pass a ligature with a bent probe under the artery to secure it. This poor woman never had a bad sympton afterwards. The circulation gradually returned to the limb, and the ligature came away about the twentieth day. This case shows two important facts, which demonstrate the correctness of your views.

1st. That unless the peritoneum be freely opened, and the abdomen examined for some little space within the stricture, an operation for hernia cannot always be considered complete.

2nd. That the external iliac may be cut, and tied through the peritoneum, and the ligature may remain in the peritoneum twenty days without inducing peritonitis. The woman died of cholera some years afterwards, when Mr. Parr made an autopsy, and dissected out the ligatured portion of the external iliac."

[Mr. Hancock proceeds to say:]

I now pass on to the consideration of the statistics of the two modes of

operation, as furnished in a late work on femoral hernia, and would here express my dissent from the position assumed by Mr. Key, that notwithstanding "the danger of the operation is by no means the same under all the circumstance attending strangulated hernia; that when the operation is performed early, before untoward symptoms have supervened, it is usually attended with a fair prospect of success. In estimating the risk of an operation, we must not separate the favourable from the unfavourable cases; we should form our judgment upon the nature and the issue of the aggregate cases that present themselves to surgeons in the ordinary course of practice.

In forming an estimate of the relative value of two operations for the same disease, we should base our calculations upon operations performed upon cases as nearly similar as possible, and not confine our operation to favourable cases, employing the other indiscriminately, and then cast up the successful and unsuccessful terminations without reference to collateral circumstances.

In table 1, contained in the work already alluded to, we find the following analysis of 198 cases, showing, according to the author, the relative amount of mortality attending each mode of proceeding; and I am bound to acknowledge that the proportion of recoveries, according to this table, appears greatly in favour of Petit's operation, being fifty-two deaths to seventy-three recoveries, where the sac has been opened, and only thirteen deaths to sixty recoveries, where it has not.

Whence obtained.	Total cases.	Sac open'd	Recovered.	Died.	Sac not open'd	Recovered.	Died.
Miscellaneous	57	48	23	25	9	7	2
Howship	8	6	3	3	2	—	2
Poland, Report of Guy's Hospital.	17	12	5	7	5	3	2
Mr. Luke	82	25	17	8	57	50	7
St. George's	34	34	25	9	—	—	—
	198	125	73	52	73	60	13

I will take the cases of Howship, Poland, Luke, and Hewett, (of the miscellaneous, I have no means of judging,) from the above calculation, and endeavour to show the degree of value which we ought to attach to the statistics advanced. Mr. Howship's operations are eight in number, six in which the sac was opened, two according to Petit's mode, both of which died. Of the six in which the sac was opened, three recovered, three died; one from ossification of the aorta and larger vessels, one from ulceration and bursting of the intestines, and the other, evidently, from purgatives and tobacco administered.

Again, take Poland's recorded cases of Guy's Hospital, seventeen in number, of which seven died, the sac having been opened. Of these seven, one had ruptured the intestines in his endeavours to return it before the operation; two had gangrenous intestine; two, gangrenous omentum; one, the parts had so nearly lost vitality, that the wound was not closed, while the last proceeded favourably until the third day, when, having had purgatives (enemata and medicine) daily, since the operation, violent purging ensued, followed by peritonitis, which, after the patient was leeched, bled, &c., destroyed him.

The most ardent supporters of Petit's operation will scarcely assert that opening the sac had anything to do with the death of the patients in these cases, particularly when it is remembered that purgatives, medicines, and ejections were administered in all, both before and immediately after the operation. And it may be asked, would the condition of these patients have been at all improved, had the sac not been opened, and consequently

seven, if not the whole, of these cases, should be left out of the calculation. Again, with respect to Mr. Luke's cases, which appear so greatly to favour the modern operation. These are given at eighty-two, in twenty-five of which the sac was opened, resulting in seventeen successful and eight unsuccessful terminations, whilst of the remaining fifty-seven in which the sac was not opened, fifty recovered, and only seven died.

But Mr. Luke, with his usual candour, throws a very different light on the matter. He says, "Between 1831 and 1841 I have attempted the performance of Petit's operation, in 84 cases. Of this number, the operation was completed successfully without opening the sac in fifty-nine. In twenty-five, it was necessary to open the sac to effect reduction, the opening generally varying from half to three quarters of an inch. With respect to the mortality of the fifty-nine, seven died; of the twenty-five, eight died. He adds, however, although it may be expedient thus to state in a general summary the results of all cases submitted to Petit's operation; yet, for the purpose of satisfactory comparison, those cases which were selected from numerous others, and which, therefore, may be presumed to yield results more satisfactory, should be excluded, as also should those cases be, which, from their nature, could not be expected to be benefitted by any operation of any description, or even by the taxis, could it have been successfully performed." For the above reason, he excludes twenty-six cases selected between 1831 and 1841, and also four others, three of which were moribund at the time of the operation, and the other had recovered from the operation, but died six weeks after from ulceration of the bowel, so that subtracting these thirty cases, fifty-four remain. Of the fifty-four the sac was opened in twenty-one, of which three died; and not opened in thirty-three, of which two died; so that, considering the class of cases requiring the opening the sac, the rate of mortality does not appear to be so much greater in that mode than where the sac was not opened. I cannot agree with Mr. Luke in considering that "the necessity to open the sac implies neither a greater degree of constriction of the hernial contents, nor a consequently greater severity of case from organic lesion, than in instances in which no such necessity occurs." For if there be greater danger in handling the cut itself, than through the sac, surely there must be greater danger where constriction is made directly on the gut by the neck of the sac, than where such constriction is caused by the tissues around the sac, and so exerts its influence upon the neck of the sac, and through it upon the intestines. And this is borne out by the fact that the mortality was greatest in Luke's cases, in inguinal hernia, where stricture at the neck of the sac most frequently occurs. However, it must be admitted that Mr. Luke has been most successful; fortunate alike in the result of his operations, and in the class of cases submitted to his knife, for few surgeons, if any, can boast, like him, of having operated upon fifty-four unselected cases of hernia without meeting with a single instance of complication.

Lastly, take Hewett's cases, thirty-four in number, of which nine died, all having the sac opened. Of these nine there was sloughy intestine in one instance combined with pneumonia; in one, sloughy omentum; in one, portions of sloughy placenta in the uterus, found after death; in one, disease of the brain; in two, the intestine and omentum were left in the sac, in consequence of adhesions; and in one only was there mere peritonitis, combined with intestine of a dark mahogany colour, but neither thickened nor softened.

I need not go further into these details; I trust that I have entered sufficiently into the subject to prove that the mortality, even according to Mr. Gay's statistics, is not due to opening the sac, but to circumstances totally unconnected with the operation.

We have here the account of 126 cases, in 86 of which the sac was opened. After deducting the 15 which must have proved fatal, whatever operation had been performed, 71 fair average cases in which the sac was

opened remain. Of these eight terminated fatally, or one in nine, whilst on the other hand, of the forty in which the sac was not opened, after deducting one in which the aorta was ossified, we have 39, of which five terminated unsuccessfully, or one in seven and a half.

Through the kindness of Mr. Hamilton and Mr. Puleston I have been enabled to obtain the particulars of 548 cases of strangulated hernia, collected from various sources. Of these the sac was opened in 474, the operation proving successful in 307, unsuccessful in 167. In three the gut was injured in dividing adhesions; sixty-one proved fatal without any complications, and of the remaining 103, in thirty-three the gut was gangrenous; in thirteen it was gangrenous, and had burst; in thirteen the gut was perforated by ulceration; in one the patient had burst the intestine in his endeavours to return it before the operation; in six, the intestine was adherent to the internal ring; in seven, adherent to the sac; in eight, gangrenous omentum; in seven, adventitious bands and adhesions together; in two, double sacs; in two, sacs contained pus; in one, colon was twisted, and could not be returned; in one, Petit's operation was first tried and failed; in one, patient delirious, in *articulo mortis;* in one, sloughing placenta found in the uterus after death; in one, disease of the brain; in one, ossification of the aorta; in one, encysted hernia of tunica vaginalis, unrelieved; in one, pneumonia, after twenty-three days; in one, constricted intestine at point of stricture; the rectum severely ulcerated from very hot enemata; in one, patient had been operated upon three times, and in another, the patient had taken several doses of croton oil, turpentine, &c., before the operation; immediately the gut was liberated, the bowels began to act, and continued to do so, almost without intermission, until she died, twelve hours after.

It should be stated, that the condition of parts here given was in almost every instance found at the time of operation, and not merely observed after death; it must consequently be admitted, that the above 103 cases would have equally terminated fatally had Petit's operation been performed, consequently the number should be calculated at 307 successful, sixty-four unsuccessful, or one in six.

On the other hand, the sac was not opened in seventy-four. In five, it failed under circumstances which would have equally influenced any operation. I consequently leave those out, and take unsuccessful cases, in one of which the gut was wounded, at seventeen, leaving fifty-two successful cases, or one in four. *Lancet, Sept.* 8, 1849, *p.* 263.

[Mr. B. Travers, jun., also stated, at a meeting of the Westminster Medical Society, his preference of the ordinary operation. His objection to Petit's operation was, he said, that in some cases the operation was performed without removing the strangulation. He said that,]

If in only one or two cases out of a hundred such a mishap could occur, he thought it sufficient to make the operation in question unjustifiable. He could not, as an operating surgeon, appreciate the fear which existed in the minds of some respecting the division of the peritoneum,—he, on the contrary, regarding such section as beneficial, by relieving the congestion which existed, and removing the fluid which had accumulated. He believed it was a rare occurrence for hernia to be fatal from peritoneal inflammation; and when this did occur, it was usually the result of constitutional causes, and the mischief was found to be situated at parts distant from the seat of the operation. He related the following case.—He was called to a fine young woman with all the symptoms of strangulated femoral hernia. Under the influence of steady pressure, exerted over the tumour for about a quarter of an hour, the hernia was reduced, with an audible noise: it was evidently intestinal. Some mild injections were administered after several hours, and she appeared well for about fourteen hours. At that time all the symptoms of strangulation recurred; and at the end of thirty hours from the first seizure she died. The operation of opening the sac had been unsuccessfully performed during the last few minutes of her life.

A piece of adherent and sloughing omentum was found at the bottom of the sac.

[In reply to these remarks, Mr. Gay allowed that the great fatality which followed hernia operations, could by no means be attributed to peritonitis. He believed that death was very frequently caused by the large and deep wounds made in the ordinary operation for hernia, which would be especially dangerous if the individual was suffering from disease of other organs. He said:]

With regard to old-standing disease of the heart, from the intimate sympathy which is known to exist between that organ and the peritoneum, it is of the utmost importance that in persons so affected the sac should be allowed, if possible, to remain entire; and that the external wound should be as small as possible. In the cases examined by Mr. Gay, he had found that where hypertrophy of the heart existed, the wound, in all instances, became erysipelatous and sloughy.

The question is, in a number of cases of strangulated hernia—What is the predetermined plan of relieving the constriction? and the answer is in favour of those cases in which the sac has not been opened. But Mr. Gay had no preference of the one operation over the other on this account, for it is most probable that the comparatively favourable results of the one system depended really upon something more—viz. the fact that those cases really relieved are by far the most favourable for operation, not in general being so complicated as those in which it becomes necessary to open the sac. Petit's operation is simply the expression of a principle, for which Mr. Gay had endeavoured to obtain the sanction and support of the profession—viz. that of not wounding more tissues, or going deeper with your incisions in a case of strangulated hernia, than is absolutely necessary for the relief of the constricted parts; and especially to avoid interference with the hernial tumor and its envelopes, which are usually in a more or less diseased condition. The lamellar separations of fasciæ in these operations are much to be condemned, and may be dispensed with. They are only made as guides for the operator; but as such they ought not to be continued. Mr. Gay's plan is, if the case appears to be favourable, to divide the stricture first outside the sac, and if that does not allow the parts to be returned by the employment of the most gentle compression by the fingers, then the sac is to be opened, and the causes of detention removed, whatever that may be. Mr. Gay recommends and practises a small incision, sufficiently large to admit the finger through the skin and superficial fasciæ, on the inner side of the hernial tumor, and in such a position that he is able to reach the seat of stricture, and divide it without interfering with the sac, excepting at the point where it is constricted. Mr. Hancock says, that the contents of the sac should be examined before they are returned, for fear of their being replaced whilst some constricting band of false membrane still keeps up the constriction, is in a condition of sphacelus, or actually ulcerated or cut through; and it has been remarked, that in every case the sac should be opened, for the purpose of ascertaining the state of the contents. This doctrine would obviously, as Mr. Smith has justly remarked, oppose itself to the restoration of the viscera by the employment of the taxis alone, were that possible—a plan which no one would venture to abandon. The previous history of the case is always sufficient to throw some light upon the state of the herniated viscera,—such as the length of period during which hernia has existed; whether it has been kept up by a well-adapted truss, or allowed to remain neglected; whether the patient has had any attacks of peritonitis, previous to the occurrence of strangulation; whether the strangulation be recent, or has existed for several days, &c. Mr. Hancock arrayed Sir Astley Cooper amongst the opponents of Petit's operation. Mr. Gay would remind Mr. Hancock that Sir Astley Cooper had said, with regard to it, that he felt convinced that "this operation will be gradually introduced into general practice, when it has been fairly tried, and found, if performed early, to be free from danger,

and attended with no unusual difficulty." In the open operation there is no difficulty in extending the external incision, so as to enable the operator to open the sac, if it be found necessary.

Such a case occurred in Mr. Gay's practice, two weeks since. A young woman was admitted into the Royal Free Hospital, with a strangulated femoral hernia. The femoral and Gimbernat's ligaments were divided outside the sac, but the contents could not be returned. Mr. Gay then enlarged the external wound, carrying it across the neck of the tumour; opened the sac; discovered a portion of omentum, and a knuckle of intestine twisted on itself. The neck of the sac was cut, the intestine relieved, but the omentum was found to be adherent to the walls of the abdominal cavity in such a manner that it could not be released. The woman has recovered, and the omentum serves as a natural plug against any future descent. *Med. Gaz. June 1, 1849, p. 959.*

[Mr. Cock, Surgeon to Guy's Hospital, has reported in the last volume of the Guy's Hospital Reports, several most interesting cases of hernia, appended to which he makes some very pertinent remarks; and, as in one case especially, these remarks refer to the division of the stricture external to the sac, we will give them in this place. The first case was one of omental hernia, respecting which Mr. Cock says:]

We are frequently called to a patient suffering from a recently-descended hernia, consisting of intestine and omentum: we succeed in returning the former, whilst the latter remains. The urgent symptoms are relieved, and we endeavour to persuade ourselves and our patient that the retention of omentum is a matter of no consequence: we even indulge in the fallacy that it will act as a plug to the ring and prevent the further protrusion of bowel. But perhaps we are too much inclined to forget, to overlook, or to slur over the fact, that from that moment the individual is placed in a state of positive inconvenience and possible danger. A portion of irreducible omentum, so far from forming a plug to the abdominal outlet, offers actual facilities for the future descent of intestine, at the same time that it, in a great measure, renders abortive the usual means employed to prevent the recurrence of a hernia. It also renders the diagnosis and the treatment of every fresh protrusion more obscure, uncertain, and dangerous. In the above case there is but little doubt that, could the omentum have been returned in the first instance, any subsequent return of hernia might have been prevented by the judicious application of a truss, and the fatal result might have been staved off, if not altogether avoided.

The necessity of abandoning a portion of omentum unreduced in a sac must always be a matter of dissatisfaction to the surgeon, as being a half curative plan of treatment, leaving his patient in a condition of anxiety and danger. The extreme difficulty of adjusting a cupped truss, or indeed any truss which shall be tolerated by the patient, and secure immunity from a future descent of bowel; the additional danger and difficulty which attends such a descent, in consequence of the sac being already partly occupied; to say nothing of the occasional mischief produced by bands of omentum extending from the abdomen through the rings, and every now and then giving rise to fatal and irremediable internal obstruction, several cases of which have come under my own observation;—all these circumstances should, I think, induce us to adopt every means to empty a hernial sac of the whole of its contents, even to the extent of recommending an operation for that purpose. In many, perhaps in most instances of irreducible omental hernia, the patient is unable to sacrifice the time, or unwilling to subject himself to the discipline necessary for starving out a portion of protruded omentum, and rendering it capable of being returned into the abdomen; and it may then become a question whether the safety of the individual would not be less compromised by the prompt and decisive treatment of operation, than by the adoption of more uncertain palliative measures.

The success which generally attends an operation for hernia when the

ration, notwithstanding the employment of all proper means. It was ascertained by the use of bougies, &c.. that there was obstruction about the situation of the sigmoid flexure. The patient had stercoraceous vomiting, the abdomen was much distended, and collapse came on shortly before the operation was performed. Mr. Crompton tells us:]

I began M. Amussat's operation by making an incision in the left lumbar region, about an inch above the crest of the ilium, a little nearer to the spine than was necessary, and carried it outwards through the skin and fat to the extent of four or five inches, laying bare the fibres of the latissimus dorsi, which I divided, and then the quadratus lumborum, till I came down to the anterior fascia, which was carefully cut through; and then a quantity of fat appeared, which I removed by pulling it and cutting it, till a dark bluish membrane came in sight. We were uncertain as to what it might be, as some such membrane I had seen in Mr. Field's case, which proved to be only a membrane covering more fat; however, I thought it prudent to pass an armed curved needle through it, lest it should be the bowel we were in search of, and such it proved to be; for, as soon as the needle had penetrated it, a quantity of gas and liquid fæces spirted out. Having secured the bowel by two sutures to the sides of the wound, I made a longitudinal incision between the upper and lower suture, which allowed a basinful or two of fæces to escape; and the man was carried to bed and laid on his back. He never expressed the least pain,—partly, I think, from the depressed state in which he was. Brandy and beef tea were given him, and hot flannels applied, but in five hours he died.

On a post mortem examination, we found the distension of the abdomen gone. On opening the abdominal parietes, the small intestines presented a slight blush, and at the contiguous margins there was the red line of commencing peritonitis, with here and there a very fine layer of lymph. On removing the small intestines altogether, the colon was well seen,—distended, but not impacted; the descending colon looked as if drawn backwards at an angle of about ten or eleven inches above the sigmoid flexure. There was no effusion of any kind, or appearance of inflammation about the bowel or wound. The descending colon, with the wound on the parietes still adherent, was removed with the rest of the bowel to the anus, and slit up, when it was found that at eleven inches from the anus there existed a firm contraction of the peritoneal coat, as if a whip-cord ligature had been tied round it. On the mucous surface there was an ulceration, with thickening to about the third of an inch; and still lying upon the ulcerated surface were a number of currant-seeds. The opening made in the bowel by the operation was just ten inches above the strictured part.

The other organs of the body (the head not being examined) were healthy.

Medical Gazette, July 20, 1849, p. 107.

78.—OPERATION FOR ARTIFICIAL ANUS.—By Professor Fergusson.

[In this case there was an opening into the rectum, the result of suppuration which had been connected with morbus coxarius.]

The opening existed on the right side between the sacrum and the back part of the ilium; it was two inches in length, and the gut could be seen protruding almost through it,—more especially when the patient made any violent respiratory effort. An orifice existed in the back part of the gut, in which the finger could be placed, and through which the whole of the fæcal matter was evacuated. A bougie could be passed from the anus through this false opening. No fæces ever came *per anum*, and the artificial anus had existed for four years. The disease in the hip-joint had become cured, anchylosis having taken place.

Mr. Fergusson stated, that the patient had been sent up to him more as a curiosity, than from any idea he could do anything for him. He, how-

ever, thought that he might be able to close the opening, and he should endeavour to-day to cover in a portion of it: and if he succeeded in this, he should finish the remainder at a future day. He then operated in the following manner:—The soft parts, which were lax and healthy, were dissected upon each edge of the opening, so as to permit them to be brought into contact. The edges of the wound were then well pared, and two hare-lip needles were introduced, by means of which the lower half of the aperture was well closed without any tension being exerted on the parts.

Medical Times. Aug. 4. 1849, *p.* 92.

79.—ON TREATMENT OF FISSURES OF THE ANUS.—By W. J. Anderson, Esq., London.

[The ordinary mode of treating this disease is by section of the sphincter ani. Mr. Anderson recommends this operation to be performed in a manner different from that which is usually adopted. He says]

The operation adopted by this great surgeon, (Boyer), and which is now generally performed, consisted in introducing the finger into the rectum, and upon it a probe-pointed bistoury, with which he cut through, "at a single stroke, the intestinal membrane, the sphincter, cellular tissue, and tegument;" thus producing a good-sized open wound. Now every surgeon must be aware that it is perfectly possible for this to be followed by a considerable amount of inflammation, and that if suppuration does occur in the loose cellular tissue around the rectum, it is an exceedingly awkward affair. This danger may be almost entirely avoided, and the operation much modified, by the following plan, which I learned from the late Professor Blandin. The instrument employed for this operation consists of a sharp-pointed straight blade, with a flat sliding guard upon one side of it. This guard is rounded at the extremity, oval externally, and flat upon the surface, lying on the blade.

It is compressed against the side of the knife by means of a spring, and retained in its position by a slightly projecting pin, sliding in a groove upon the blade. The whole or a portion of the guard can be retracted within the handle by a button attached to it for that purpose. The forefinger of the left hand is introduced into the rectum, and a small opening is made at the verge of the anus with the point of the knife. The guard is then protruded beyond the point, and the instrument carefully introduced through the wound into the sub-mucous cellular tissue between the mucous membrane and the sphincter ani. The cutting edge is then turned towards the muscle, the guard retracted, and the muscle cut through as the blade is withdrawn. If any doubt remains as to whether the muscle is completely divided or not, the instrument (guarded as before) may be re-introduced, and a second cut made in a smaller manner, exactly upon the first. But if Boyer could cut through all the tissues, in his operation, at one stroke, surely we may do it also, especially when we have not the intestinal membrane and tegument to deal with. The small external wound should then be closed, and the bowels kept in a lax state by means of the confection of senna, given in sufficient quantities to render the motions moist; but purging should be carefully avoided. It may be as well to apply some unctuous substance locally, to prevent any irritation from the fæculent matter.

We have here, at any rate, an operation far less repulsive and formidable to the feelings of the patient, and certainly, in a practical point of view, attended with much less risk. The relief is as instantaneous as in the other operation; but no large open wound is left in the intestine; defectation can, therefore, be performed without the same amount of irritation; and the cure is materially expedited, inasmuch as the parts are not kept in a state of disunion longer than is necessary for its completion. Of course the same preliminary treatment, with regard to unloading the bowels, is necessary in

this as in the other operation; and those excellent remarks by Sir Benjamin Brodie, concerning the impropriety of cutting directly forwards in the female, or directly backwards in either sex, are equally applicable to both methods of operating. *Lancet, Sept. 15, 1849, p. 291.*

80.—CASES OF HEMORRHOIDS, TREATED BY NITRIC ACID.—By Dr. R. T. Massy, Physician to the Exeter Dispensary.

Pure nitric acid performs most rapid and wonderful cures in bleeding piles, whether external or internal, and is a safe and easy remedy in its application. Since Mr. Cusack, of Madam Stephen's Hospital in Dublin, first introduced it into practice, I have frequently recommended surgeons to try it before using the ligature or knife. I can assert, from some experience in using it myself, and from the writings and remarks of others, that we have not a better or safer application to *cure* hemorrhoids.

One gentlemen, who consulted me in May, 1847, describes his piles as hanging about his legs. I shall give the notes from my medical case-book of record:—

A. B. aged 30, a farmer, of fair complexion, stature 5 feet 6 inches, countenance anæmic, has been an invalid for some years with bleeding piles, which came on gradually; and to them he has a family predisposition. Present state of the complaint:—Has got a large vascular tumour of the rectum protruding at the verge of the anus, which bleeds half a pint of black blood immediately after stool. The tumour has two bleeding surfaces, with an excoriation of almost an inch square. His bowels are moved at ten o'clock, p. m. every night by taking at noon each day (which is an hour before his luncheon,) a wine-glassful of the following aperient mixture:—

℞. Infusi sennæ, ℥vi.; sulph. magnesia, ʒiv.; carb. magnesiæ, ʒss.
M. ft. mist.

One night after stool, as he lay on his side on a mattress, I applied, with the feather of a quill, nitric acid to the bleeding surface; and when the part turned white, I laid on a pledget of lint, covered with olive oil, and then returned the gut. Complained of slight darting pains during the night. Got up on the second day; made an examination on the twelfth day; the tumour is greatly reduced in size, and bleeds very little now; applied the nitric acid as before. Remained in bed for a day; felt a degree of tightness during defecation, in the region of the anus.

24th day.—Applied the nitric acid again to contract a small remaining portion of the tumour.

36th day.—Is now cured, can ride and drive, and walk about during the whole day; feels a new man.

I have touched with the acid a bleeding surface three inches up the rectum, with the same benefit.

A. C.—This man lost, at each stool, a large quantity of blood; he was quite emaciated and worn out with pains in the back, and down the thighs. On looking up the rectum I discovered an oval bleeding surface, its greatest diameter being more than an inch; it was soft, vascular, and elevated, and about three inches from the verge of the anus. Two applications of the acid cured this patient.

A. D., aged 27; this gentlemen had external blind piles; two were visible at the verge of the anus, feeling tense, and looking as large as a *hazel* nut. Touched them with nitric acid. On the fourth day they were quite contracted, and drawn up. It is now more than twelve months since he was cured, and he has had no return of them since. Persons having hemorrhoids should always be advised to defecate just before going to bed; this can be easily arranged by giving a dinner pill,—say three grains of the pilulæ aloes dilutate with one grain of gum mastic.

As this pill mass is not given in the Pharmacopœia, I may state its composition:—Pilulæ aloes dilutæ, *Jephson.*

℞. Alöes bbs., saponis hispan., ext. glycyrrh., theriacæ, sing., partes æquales; solve in aquâ; cola spissa leni calore.

Although I always look to the state of the liver, and give a blue pill at bed-time, and a saline aperient early on the following morning, that the bile may be removed, and the bowels cleared out before using the acid, yet I look on many cases as local, and by no means connected with the portal circulation.

I am in the habit of desiring the patient, after I have used the acid, to lie on a sofa, or to remain in bed for the day; notwithstanding this injunction, I have now and then met one, on the sofa-day, at a dinner-party, or walking about town, the pain from pure nitric acid is so slight, causing little or no inconvenience. *Medical Times, June* 30, 1849, *p.* 674.

81.—ON THE TREATMENT OF EXTERNAL HEMORRHOIDS BY POTASSA FUSA.—By Dr. F. C. Jones, Surgeon to the South London Dispensary.

[Dr. Jones states that within twelve months he has treated between sixty and seventy cases of external piles with undeviating success, by the means which he here describes. He says:]

Observing that in all cases of spontaneous cure of external hemorrhoids, they primarily slough, I was led to think that if nature obliterates the vessels by sloughing it is feasible that artificial means might induce the same remedial action.

In turning over in my mind the action of various remedies likely to produce this condition, it struck me forcibly that potassa fusa was precisely the agent required. I forthwith determined to apply it to the first case that came under my care, and the results were, that upon the first application the patient complained of a burning sensation, which passed off in the course of half an hour; at the end of four days the parts were considerably diminished in size, and by brushing a piece of lint quickly over the part I removed the superficial slough, and again applied the potassa fusa; the same treatment was followed at the interval of four days, at the end of which time they had entirely disappeared, leaving only a slight sore, which healed within a week. *Lancet, Sept.* 8, 1849, *p.* 277.

82.—NEW INSTRUMENT FOR OPERATING ON HEMORRHOIDS.—By M. Amussat.

M. Amussat has invented a new instrument for the eradication of these troublesome companions. It is a small forceps, somewhat like a dissecting forceps. The points, or rather the branches, for one-third of their length, are split, and receive two small hollow cylinders, which are charged with Vienna caustic at the moment of operation. The branches of the forceps are brought together by a screw, and the base of the pile attached by constriction and cauterisation conjointly. When the instrument has acted for some time, a jet of cold acidulated water is directed on the part, to remove the superfluous caustic and allay the sensation of burning. M. Amussat has already applied his instrument in practice with complete success.

Medical Times, July 14, 1849, *p.* 23.

83.—SALIVATION TREATED BY NITRATE OF SILVER.—By — Kirby, Esq.

In a late number of the Medical Press, M. Bouchacourt is reported to have used successfully a solution of nitrate of silver in a case of profuse salivation, in which various gargles and sinapsims, &c., have been employed without benefit. I have had much experience of this remedy, having used it for many years in cases of sudden and inordinate salivation. It rapidly

arrests stomatitis and the attendant profuse discharge, provided it be applied of proper strength, and with sufficient frequency. Of course the teeth become deeply discoloured, but these stains being removable by means which shall be noticed, temporary disfigurement is not to be urged as an objection to a free and general employment of so controlling a remedy.

A case selected as an example.—Mr. G., under treatment for bronchitis, with engorgement of the liver and heart, was unexpectedly seized with violent salivation and distracting pain of his gums, which were unusually swollen. I ordered the following solution:

℞. Nitratis argenti drachmam. Aquæ distillatæ unciam. Sol.

This solution was freely applied three or four times daily, with a hair pencil, by my friend Mr. Collins. The heat and smarting which ensued upon each application quickly subsided, and was followed by a period of much ease. In three days the patient's mouth was well.

Until now he had no idea of the condition of his teeth, of whose shape and colour he was always rather vain. His annoyance and dissatisfaction at the "ruinous" change of these adornments was displayed in terms of no equivocal import; his chagrin, however, was soon allayed as he saw them brighten under the use of a solution of hydriodate of potash, in the propertion of two drachms to an ounce of distilled water; which solution was frequently applied by a brush. He now left for the country, and continued this treatment. When I saw him on his next return to town, his teeth had nearly resumed their former attractive lustre; I say nearly, for although darkness had wholly disappeared, yet a slightly yellowish tinge was perhaps observable.

Mr. Collins, who has been engaged in some experiments as to the means by which stains from the nitrate of silver may be most effectually removed, has favoured me with the following report: "I applied a solution of nitrate of silver, in the proportion of a drachm to an ounce of distilled water, to two extracted teeth for some days, until a deep blackness was produced. I treated the one by a solution of the cyanide of potash, in the proportion of one part of the salt to two of distilled water; the other I treated by a solution of hydriodate of potash, in the proportion of four grains to ten minims of distilled water; and the hyposulphite of potash in the proportion of one part of the salt to two of distilled water. The latter plan succeeded very well, but the former produced a much better effect, more thoroughly removing all traces of discoloration, after being patiently and carefully applied by means of a soft brush. *Dublin Med. Press, Aug.* 1, 1849, *p.* 70.

[Mr. Collins, in another number of the Dublin Medical Press gives the following further information on the subject:]

If a solution of cyanide of potassium be added to a solution of nitrate of silver, a whitish precipitate of cyanide of silver immediately occurs. This precipitate is perfectly soluble in an excess of the cyanide of potassium, forming a colourless solution. Black stains produced by nitrate of silver on the skin, nails, teeth, and on linen, &c., brushed over with a solution of cyanide of potassium (eight or ten grains of the salt to ℥j of distilled water) are similarly acted on. They will disappear after one or two applications if at all superficial; if even deeply seated in the textures, they may require several. The cyanide of potassium is a cheap salt, and may be had at the Apothecaries' Hall, or from any respectable druggist. The solution should be made fresh, as it is liable to spontaneous decomposition.

Dublin Medical Press, Aug. 8, 1849, *p.* 83.

URINARY ORGANS.

84.—ON THE PATHOLOGY AND SURGERY OF URINARY CONCRETIONS.—B. B. Cooper, Esq., F.R.S., Surgeon to Guy's Hospital, &c.

[One of the most valuable papers recently published on the above subject is by Mr. B. Cooper, from which we shall take the liberty to draw largely, on account of its great value, and with the object of diffusing its usefulness as much as possible. After some preliminary remarks, Mr. Cooper says:]

From the circumstance, that as all the constituents of the urine are derived directly from the blood, and that all its ultimate elements are found in that fluid, it follows, that any defect in the function of those organs by which the food is converted into blood. causes an immediate change in the character of the urine, which is consequently found to contain either an excess or deficiency of some of those substances essential to its normal condition. It is evident, therefore, that healthy urine can only be secreted from healthy blood; and it is probably owing to the influence exercised upon the urine by the changes produced in the blood by interruptions to the processes of assimilation, that indigestion proves the most prolific cause of those peculiar conditions of the urine in which there exists a tendency to the deposition of one or other of its constituents.

The characteristic constituents of the urine, viz. uric acid and urea, contain a considerable quantity of nitrogen, and are probably produced from the nitrogenized constituents of the body by the process termed "metamorphosis of tissue." The principal function of the kidneys seems, therefore, to be that of separating and conveying out of the system the nitrogenized matters derived from worn-out tissue, withdrawing them from the blood during its circulation, and excreting them in solution in the urine.

A considerable proportion of the urinary constituents are soluble in water or an alkali, while others require that some acid should be present to effect their solution. The most important of the former are urea and the salts of uric acid: the latter class comprehends the phosphates of lime, magnesia, triple phosphate, &c.

The fact that the solid constituents of the urine are held in solution by agents differing widely in their chemical character, is a subject of considerable importance in respect to the formation of gravelly and calculous deposits. The salts of uric acid, for example, are more or less soluble in water and in the alkalies; but the addition of an acid, even weak acetic acid, to any of the urates in solution, causes their decomposition, with the consequent deposition of the uric acid, which is itself nearly insoluble in water and weak acids. This proves that an abnormally acid state of the urine, even if the free acid be of the weakest kind, is incompatible with the existence of the combinations of uric acid; hence the use of acid wines, fruits, or any matter which, by fermentation in the stomach, may be converted into an acid, as sugar, &c., may cause the precipitation of the uric acid either in the kidney or bladder; and according to circumstances, this deposit may take the form of gravel, or be concreted into a calculus.

Deposit of uric acid may, however, take place in the urine when no abnormal quantity of any other acid is present; and the deposition of the uric acid may be either pure or consisting of a combination of uric acid with an alkaline base, and would probably, in that case, depend upon its being generated in excess, or upon some diminution of the water of the urine. In persons who lead very sedentary lives, and take but little exercise, these uric acid deposits are frequent, owing, probably, to some interruption to the functions of the digestive organs, and also to the sluggish action of the skin, which, under those circumstances, is incapable of removing the nitrogenized matter ordinarily carried off in the perspiration. An excess of nitrogen is consequently conveyed to the kidneys, and carried by those organs

into the urine, under the form of urate of ammonia, in quantity greater than can be held in solution; so that when the temperature of the urine is reduced below that of the body, the excess over the normal proportion is immediately deposited

Excessive perspiration may produce a similar effect, although by a different kind of action. When a large amount of fluid is given off by the skin the bulk of the urine is diminished; but as nearly the average quantity of nitrogenized matter is conveyed to the kidneys, the urine secreted contains a disproportionate amount of uric acid, and then the deposit is *formed* on the cooling of the urine, exactly as under the circumstances before mentioned.

The earthy constituents of the urine, as I have remarked before, are *insoluble* in water; and some feeble acid, or acid salt, must be the means of holding them in solution in the urine. We have already seen that any free acid decomposes the combinations of uric acid (in which state only that substance is soluble in the water of the urine), precipitating it in the solid form. If, therefore, an acid be the solvent for earthy phospates in normal urine, it is evident it must be one of the feeblest kind; one, indeed, which cannot decompose the salts of uric acid. It has been supposed that chloride of ammonium is the solvent of earthy constituents; but the very small quantity of this salt contained in the urine renders such an opinion scarcely tenable. The lime has also been thought to be present in the state of the super or acid phosphate, a very soluble compound. capable of acting as a solvent to other earthy phosphates, and believed by some to be the cause of the acid reaction of normal urine. Dr. Brett, however, some years ago, gave what appears to me to be a much more simple and rational view of the probable nature of the solvent of the earthy salts of the urine; he was, I believe, the first to show that urine, when first voided, contained a considerable quantity of free carbonic acid, and this he regarded as the medium by which the phosphates of lime and magnesia were held in solution. That carbonic acid possesses the power of dissolving phosphate of lime or magnesia is readily proved, by passing a current of gas through water in which those phosphates have been previously precipitated; after some time the whole of the phosphatic precipitate will be dissolved by the carbonic acid, and be held in solution until the temperature of the fluid is sufficiently raised to drive off the carbonic acid, when the dissolved phosphates are again precipitated.

If fresh urine be boiled in a flask furnished with a bent tube leading into lime-water, the latter will become turbid after a few minutes, owing to the action of carbonic acid evolved from the urine; if the boiling be continued, a copious precipitate of carbonate of lime will be produced, and, at the same time, the urine will also become turbid, from the phosphates being precipitated, in consequence of the loss of their acid solvent. It has been suggested that the precipitate in the lime-water may be formed by means of carbonate of ammonia expelled from the urine by the heat: but this cannot be the case; for if a slip of litmus paper be placed in the lime-water during the passage of the carbonic acid and steam from the boiling urine, it will, after some time, be tinged red, indicating the presence of a free volatile acid, which in this case, so far as our knowledge goes, can only be carbonic acid.

The supposition that the solution of the earthy phosphates is due to carbonic acid explains the phenomenon of the precipitation of those compounds from the urine by boiling only. This is not uncommon in certain conditions of the urine; and it can easily be understood, that when the amount of phosphates exceeds the normal standard, the expulsion of even a very small proportion of the volatile acid solvent would cause their immediate precipitation.

As the phosphates are held in solution in the urine by the solvent power of an acid (in which it must be remarked they are dissolved only, without

any chemical decomposition), it follows that the addition of an alkali, by which the acid solvent can be neutralized, will directly cause the precipitation of the earthy matter. Thus the addition of a small quantity of liquor ammoniæ to healthy urine will lead to the deposition of a cloud of the earthy salts. This fact is worthy of particular attention; for it shews us that the two classes of urinary constituents, viz. the salts of uric acid and the earthy phosphates, are held in solution together only so long as a certain equilibrium is preserved in the state of the urine, and that their properties are, as it were, exactly antagonistic to each other; the conditions most favourable to the solution of the one class being entirely incompatible with that of the other. For instance, the alkalies constitute the most effective means for the solution of uric acid and its salts, whilst at the same time the presence of a free alkali in the urine causes the earthy phosphates to be thrown down from solution. On the other hand, if the urine be rendered preternaturally acid, we have exactly the opposite effect produced; the acid favours the solution of the phosphates, which cannot be precipitated in its presence; but it decomposes the salts of uric acid, which latter substance is almost insoluble in water or the weaker acids, and therefore a deposit of red gravel or the formation of a uric acid calculus, is the result.

These, as I have said before, are points worthy the closest attention, because they evidently materially affect the curative indications in gravel or stone. For example, to administer acids where there is a tendency to uric acid deposit would, of course, be to increase the evil; and in like manner alkalies, which in such a case would be indicated, would, when there was a tendency to the deposition of the phosphates, promote that tendency, and be productive of great ulterior mischief. In the administration of remedies, when there is a liability to urinary deposits, it must be remembered that the salts of the vegetable acids with alkaline bases operate as alkalies, as they undergo decomposition in the stomach, and are converted into carbonates.

Now it is clear, that although in a perfectly healthy state, the balance between the solid constituents of the urine and their solvents is so adjusted, that the latter are always in sufficient excess to maintain the solid matter in a state of solution; still it is to be remembered that this balance is easily disturbed; so easily, indeed, that the slightest interruption to the functions of the skin or digestive organs is sufficient to produce certain abnormal changes in the urine, leading to the precipitation of one or other class of its constituents.

If we examine into the physical character of the formation of calculi, we shall find that the different constituents are never deposited simultaneously; that is to say, we never find a mixture of uric acid or urate of ammonia with earthy matter deposited in one general mass; but when these various substances are found in the same calculus, they are deposited in distinct laminæ, separable from each other. This fact serves to prove that the deposits of the urates, uric acid, or the earthy salts of the urine, are formed under circumstances dissimilar to each other, and under conditions supervening, and never co-existent. It is not difficult to understand how these different conditions of the urine may so completely replace each other, as the structure of almost all calculi affords evidence of their constantly doing. It seems to me that calculous concretions are most liable to occur when the urine is in a state of close equilibrium, or possessing, at the utmost, only just sufficient solvent power to maintain its constituents in solution at the temperature of the body. The condition I speak of may arise, as we have already seen, from a diminution of the fluid part of the urine, from increase in the secretion of uric acid, or from a deficiency of the solvent of the earthy phosphates. Under any of these circumstances, the precipitation of certain of the urinary constituents will be induced by very slight causes; such, for instance, as the presence of a foreign substance in the bladder capable of acting as a nucleus.

As the slightest causes are sufficient to produce that peculiar condition in the urine, in which it is prone to deposit uric acid or urata of ammonia, it will be found that calculi of those substances are much more frequent than any other kind. It is, however said, that calculi composed wholly of urate of ammonia are rare in individuals who have passed the age of puberty; but an examination of the collections of calculi contained in various museums shows that about two-thirds of the whole number consists of stones, the chief or fundamental part of which is uric acid.

When a foreign body, accidentally introduced into the bladder, becomes the nucleus of a calculus, the deposit formed upon it almost invariably consists of the earthy constituents of the urine; this has generally been accounted for upon the belief that the foreign substance causes great irritation of the lining membrane of the bladder; and it is stated that, under these circumstances, phosphate of lime is secreted in increased quantity, and poured into the bladder mixed with the vesical mucus, The tendency to the deposition of the phosphates upon a foreign nucleus may however depend, at least in some measure, I think, upon a different action. *It is* well known that any solid body, having an uneven surface, and offering points and asperities, will cause the rapid evolution of carbonic acid from any fluid impregnated with that gas: thus, for example, if into soda water, in which the effervesence from the spontaneous liberation of the gas has completely ceased, we throw a few pieces of cuttings of metal, or even bread or wood, gas will again begin to be given off from the fluid. If, then, we consider (and I think it scarcely admits of doubt) that carbonic acid is, at least in some measure, the solvent for the earthy constituents of the *urine*, it will at once be seen that the presence of a foreign body of irregular figure may cause the gradual but continuous discharge of the carbonic acid from the urine; and as the liberation of this gas takes place from the points presented by the foreign substances, it follows that the earthy matter thus deprived of its solvent is precipitated upon that body. This precipitation takes place, however, with extreme slowness; so much so, that the particles aggregate as they are deposited upon the nucleus. In addition to this natural aggregation of particles (which may always be observed when *solid* matter is deposited from a solution by slow degrees, even when regular crystals are not formed) the vesical mucus seems to operate as a kind of cement, assisting in the consolidation of the calculus during its formation.

Although in almost every case in which a hard foreign substance forms the nucleus of a calculus, the deposit consists of the earthy phospates, in some instances a foreign substance may lead to the deposition of uric acid or urate of ammonia. The nature of the matter thrown down from the urine under any circumstances must, however, depend upon the state of the constitution and upon the condition of the urine itself, so far as regards the relation of the solid matters to their different solvents. If the foreign substance present in the bladder be of irregular figure, and of a roughened surface, so that it is likely to produce much irritation in the mucous lining of the bladder, or, according to the view I have stated, to cause the slow evolution of the gaseous solvent of the earthy matter, then the deposit may consist of the phospate of lime or magnesia, or the oxalate, or even carbonate of lime, as the case may be. If, on the other hand, the foreign substance be not *of a* nature to produce great irritation at the bladder, or to induce the liberation of gas; and if at the same time the fluid portion of the urine be from any cause diminished, or uric acid generated in excess; the deposit would probably consist of uric acid or the alkaline urates. Of course, as I have already said, the nature of the deposit must be materially influenced by the state of the constitution; and where calculi form spontaneously, that is to say, without any apparent nucleus being present, the kind of deposit will entirely depend upon constitutional causes, but under the former circumstances, that is, when stone is originally induced by the presence of a nucleus, the kind of stone at least so far as its internal position is concerned, seems to depend in great measure upon the nature of that nucleus.

Calculi in the kidneys frequently follow mechanical injury to those organs, and no doubt often owe their origin to the presence of small portions of coagula, which, acting as nuclei, determine the deposition of the solid matter of the urine. When this is the case, it will generally be found that such calculi consist, at least internally, of uric acid or urate of ammonia; for when renal calculi consist of oxalate of lime, the circumstances of the case generally go to prove that they are entirely produced by constitutional causes.

When uric acid or urate of ammonia form the central part, or indeed the general mass, of a calculus, it very often happens that the external layers consist of phosphate of lime, of the fusible compound of phosphate of lime, and ammoniaco-magnesian phosphate, or of the latter substance exclusively; but calculi consisting entirely of earthy matter are comparatively rare.

When the phosphate of lime is spontaneously deposited in the bladder, there appears to be, generally speaking, considerable impediment to its concreting into a solid mass. I have met with many cases in which the urine has been charged with an immense quantity of thick ropy mucus, which, upon chemical examination, was found to contain a great deal of earthy matter. Whether, in these cases, the effusion of the mucus matter was caused by the irritation arising from the presence of the phosphate of lime, or whether the deposition of the latter substance was produced, as is generally believed, by the reaction of the purulent mucus upon the urine itself, is a matter for question. I am inclined to entertain the former view, as in none of the cases I have mentioned was the urine alkaline, nor did it present any indications of putrescence. One thing is, however, certain, that presence of the mucus matter affords an effective obstacle to the aggregation of the earthy particles, which remain completely suspended in the thick fluid, and pass off readily with the urine during micturition. I have several times collected the mucus from such urine, and found it to contain, after being dried, from twenty to thirty per cent. of bone earth, and in one instance, as much as thirty-four per cent.

The phenomenon of the deposition of the phosphates from the urine appears to me to be indicative of a change in the constitution very analogous to that which is generally observed to be concomitant with advanced age. This change is doubtless, in both cases the result of diminished vitality; and we therefore perceive, that causes operating as a means of lowering the vital power, would, at any period of life, produce a condition similar to that which in age, occurs spontaneously as the result of the natural exhaustion of the eliminating powers.

When the system is in that state of vigorous health arising from the due performence of the various animal functions, a certain balance is preserved between the deposition of the matters constituting the different parts of the body; so that, for instance, the formation of bone and muscle proceeds in a regular ratio, neither being in excess; and if the food contains more of any particular constituent than is requisite to preserve the normal equilibrium, that excess is rejected un-assimilated and is conveyed out of the body as excrementitious matter. As age advances the muscular system becomes less and less active, it diminishes also in bulk, and then the equilibrium between the bones and muscles is destroyed; the tendency on the part of nature is still, however, to maintain the natural equilibrium; consequently there seems to be established an effort to reduce the size of the bones by the absorption of the bone earth; and hence it is, that, in the bones of the aged, the proportion of phosphate of lime is always much less than in the bones of middle life. In old people, as the activity of the muscular system decreases, so also does the circulation become more or less enfeebled; so that, even if there existed no tendency to reduce the quantity of phosphate of lime in the bones by absorption, it would still be impossible for them to receive the normal quantity of that compound; for the blood, which is the carrier of all the constituents of bone, as well as of the other tissues, has

lost the vigorous impulse that was wont to propel it through the capillaries. It must, however, be remembered, that the blood itself still continues to receive a supply of the phosphates from the food; and as they cannot be conveyed by the capillaries to increase the osseous system, they become deposited in other tissues; and we accordingly find in old age earthy concretions forming in the arteries and other solid structures, but most frequently in the urine. Now it is evident to me that this condition arises entirely in consequence of diminished vital energy; and I believe that whenever a similar disposition to phosphatic deposit occurs, either in youth or middle life; it arises from a precisely similar constitutional state, induced by the operation of any cause capable of depressing or exhausting the vital powers. Excessive fatigue, long-continued mental anxiety or labour, disturbance to the function of digestion, or chronic disease, may, any of them, be capable of producing this phosphatic diathesis. In examining into the statistics of urinary calculi, I think I have found that the phosphates seldom constitute the primary deposit until after the middle period of life—until, indeed, the action of the arterial system has become somewhat sluggish; and when the phosphates form calculi at an earlier period, I have no doubt that investigation would prove the individuals, in all such cases to have laboured under great constitutional debility. When the phosphates are deposited upon a neuclus of foreign matter accidentally introduced into the bladder,—as, for instance, a piece of bougie,—I believe the action to be dependent upon the principle I have already stated, viz. the mechanical *effect* of the extraneous matter upon the urine; for in such cases the constitutional disturbance is seldom commensurate with the amount of phosphatic deposit, and moreover, the tendency to the deposition of the phosphates appear to cease immediately upon the removal of the foreign substance which originally acted as the nucleus.

In early life there seems to exist a condition of the system exactly the converse to that just described as peculiar to old age. In the former case the vital energies are at their maximum activity; the assimilations *of the* constituents of muscle and the soft parts of the body seem then to be carried on with greater rapidity than that of bone; consequently there is an excess of those tissues rich in nitrogen. Hence in youth there exists a tendency to the formation of uric acid in an abnormal quantity; and this substance, either alone or in combination with ammonia, will, I believe, be found to constitute by far the greater proportion of urinary calculi, not only in youth, but even at later periods, so long as the system remains in a vigorous state, and as these uric acid deposits are frequently formed *without* any apparent interference with the normal performance of the animal functions, they seem scarcely to constitute a diseased condition.

Among the constituents of urinary calculi, those that I have already spoken of,—namely uric acid and its compounds, and the earthy phosphates, —may be derived at once from the urine, without that fluid having undergone any chemical change; it being, I believe, only necessary that these substances should be increased in quantity as a result of their inordinately free elimination from the blood; a circumstance which experience teaches us is by no means unfrequent under peculiar conditions of the system. These compounds must, therefore, be regarded as composed of the normal constituents of urine. There is, however, another class of substances sometimes found in the urine, which are altogether different from those just now mentioned, and which do not enter into the composition of that fluid in its normal state, and are, indeed, never found in perfectly healthy urine, but are the product of some vitiated vital action which causes the mal-assimiliation of the ingesta. Of these compounds, oxalate *of lime* is no doubt that most frequently met with, both in the urine itself and under the form of calculi. Indeed, it has been shown by Dr. Golding Bird that crystals of oxalate of lime are commonly met with in the urine of *patients* labouring under chronic dyspepsia; and it is well known that the mulberry, or oxalate of lime calculus is one of comparatively common occurrence.

From the observations of medical authorities on the circumstances attendant upon the formation of deposits of oxalate of lime, and of the earthy phosphates, it would at first sight appear, that, in both cases, the cause of the abnormal state of the urine may be traced to extreme constitutional depression and loss of vital energy. There is, however, in my opinion, a strong distinction to be drawn between the condition of the system which leads to the deposit of the earthy phosphates, and that in which oxalate of lime is generated. The latter substance is a product of the vitiated action of organs naturally employed in the elaboration of the ingesta into those matters required for the formation of the various parts of the organism, and the supply of the waste of tissue always going forward during life. In consequence, then, of some interruption to those vital chemical changes, by means of which the refuse nitrogenized matter of different organs is brought into that condition in which it can be excreted in solution in the urine, oxalic acid is generated. This substance must be looked upon, therefore, as one foreign to the animal system in its normal state; and its formation is doubtless dependent upon, and symptomatic of, that peculiar constitutional depression which arises from a defect in the function of the digestive organs, or perhaps in those of respiration, if the supposition of some chemists be correct, viz. that the generation of oxalic acid depends upon the imperfect oxidation of those nitrogenized matters which, in the normal state, are eliminated by the kidneys, under the form of uric acid and urea.

The formation of oxalic acid is traceable, then, to a modification of those chemical changes, to which we owe, under all circumstances, the elimination of the natural constituents of the urine from the blood; and we can scarcely fail to perceive why (although the circumstance had so long escaped the notice of medical practitioners) the formation and presence of oxalate of lime should be very frequent in the urine of individuals labouring under any abnormal condition of the digestive, or of the respiratory organs.

I have lately examined the urine of a boy labouring under phthisis. It afforded a strong support to the above view, for it contained an immense number of crystals of oxalate of lime, and also the cystiform appearance mentioned by Dr. Prout as indicative of serious functional disturbance, or organic lesion. The appearance I allude to resembles strings of egg-like bodies united by their extremities, three, four, five, or six together.

Any circumstance which produces interruption to the process of assimilation, and secondarily, perhaps, to that of respiration, favours the formation of oxalic acid; and although, according to that view, which refers the generation of this substance to the imperfect oxidation of uric acid, food can produce no direct effect upon this phenomenon; still, in many cases, there can be no doubt that the character of the food does produce an immediate influence, and that oxalate of lime taken into the stomach does, like other saline matters, find its way at once into the urine. And it seems to be probable, when we reflect upon the close connection between certain of the chemical principles of the food and oxalic acid, and upon the facility with which such substances as starch, gum, and sugar are artificially convertible into oxalic acid, that an analogous change may take place under the influence of vital chemical action, and oxalic acid be generated as a direct product from the food.

In cases where the deposition of phosphate of lime occurs, the circumstances will, when closely examined, be found very dissimilar from those under which oxalate of lime is produced. It is true that, both where phosphate of lime and oxalate of lime are deposited, there exists in a high degree loss of vital power; but this condition appears to arise from very different causes. When the earthy phosphates are precipitated from the urine, the principal concomitant symptom is extreme nervous depression; and therefore any cause operating upon the nervous system is generally sufficient to produce the deposition of phosphates from the urine. I have

already stated my belief, that, in almost all cases, the phosphates are deposited from the urine itself, and not eliminated by the mucous membrane of the bladder; and it is easy to perceive, that where the nervous influence has become much diminished, that peculiar property possessed by all organic fluids (when existing in the organism in which they are secreted) to resist ordinary chemical change is very materially lessened. Hence the fluid is prone to rapid decomposition; and such appears to be the case with the urine. No matter what the cause may be, whether accidental or idiopathic, where the nervous energy becomes much weakened, the conservative power, if I may employ the expression, is proportionably lowered; and, under these circumstances, the urine passes rapidly into a state of change, its elements re-arranging themselves, to produce an alkaline condition, which, of course, leads immediately to the deposition of the earthy phosphates, under the form of the triple phosphate, phosphate of lime, or a mixture of both. Hence it is that lesion of the spinal marrow always produces alkaline urine, by destroying the nervous energy of the coats of the bladder, as well as that of the urinary organs generally.

Where the nervous influence is much depressed, I have often remarked that the urine itself is liable to undergo decomposition very soon after evacuation; and indeed I almost question whether, in some cases, although the urine did not manifest any indications of putrescence, incipient decomposition, had not commenced in the bladder; for I have known such urine to be filled with infusoria (vibriones) within a very few hours after it was passed. I have particularly noticed this in cases of paralysis, and in those of great depression accompanying long-standing disease of the prostate gland in old people. In phosphate of lime we have one of the normal constituents of the urine, which, without undergoing any chemical change itself, becomes altered in its relations to that fluid, in consequence of induced changes in the chemical nature of certain of the organic urinary constituents. In oxalic acid, on the other hand, we have a substance abnormal to the system, produced by a defect either of the primary assimilation of food, or in those chemical operations by which the worn-out tissues are brought into that state in which they can be conveyed out of the system through the agency of the kidneys.

In the generation of oxalic acid we perceive the manifestation of a vital action, although probably one of diminished intensity, in comparison to that natural to the organism. In the deposition of earthy phosphates we have the ultimate result of remote changes acting on the constitution generally, and reducing the vital power of every portion of the living body, so that it is no longer capable of withstanding the influence of the usual chemical changes to which all dead matter is subject. The deposit of the earthy matter is the effect of the dissolution of those forces by which the normal condition of the urine is maintained, and is the result of a change, in which they play no part themselves, their physical condition alone being modified according to the nature of the influences by which they are surrounded.

The formation of oxalic acid is only one out of many instances of the generation of peculiar abnormal compounds, in consequence of some interference with the ordinary vital chemical changes that constitute the medium of the removal of the worn-out tissues of the body.

The formation of sugar in the urine, in diabetes mellitus, of the substance termed xanthine or uric oxide, and of the remarkable compound, cystine, are all examples of vitiated vital chemical action.

Cystine affords perhaps the most striking instance of this kind, it being extraordinary on account of the large proportion of sulphur it contains—above one-fourth of its whole weight. Although the nature of the chemical changes by which cystine is formed is not at all understood, it is, I think, evident that this substance must be derived from the metamorphosis of albuminous matter, and is probably a means adopted by nature to remove an excess of sulphur, which ought normally to have passed away by some

other channel. It appears from the researches of Dr. Golding Bird and others, that the formation of cystine is generally the result of a peculiar constitutional deterioration, which is often hereditary, or at least common at one time to several members of the same family.

I believe that the formation of urinary concretions, generally speaking, depends less upon defect in the urinary organs, themselves, than upon an abnormal state of the constitution; and the processes of digestion, respiration, and exhalation from the skin bear so important a relation to calculous disorders, that the constitutional treatment certainly deserves as much attention from the surgeon as the study of the minutiæ connected with the mere operation, which seems, however, to be too generally considered as the only part of the subject with which he ought legitimately to deal.

As acids are known to produce the deposition of uric acid from its solution in the urine, it is generally believed that the effect of acid taken into the stomach is to increase the tendency to the formation of uric acid deposits in constitutions in which that diathesis prevails; but it is a matter of question whether the acids taken into the stomach are capable of passing into the urine in a free state. I think that both acids and alkalies undergo chemical change, and only produce their effects through their influence on the constitution. There can be no doubt that the carbonates of soda and potash, and liquor potassæ, are useful in a uric acid diathesis; but whether they merely act by neutralizing the acid of the urine, or by altering the peculiar condition of the blood, I am not prepared to say: this I know, that blue pill, colchicum, and opium produce the same effect as alkalies, even when there is no evidence of direct gouty tendency. These remedies seem to act upon the assimilative organs, leading to the formation of more healthy blood, and so influencing the condition of the urine.

In the uric acid diathesis, low diet and vegetable food are advisable, and some vegetable acids seem useful, although all substances liable to generate acid in the stomach must be scrupulously avoided. A proof that the use of vegetable acids does not produce any tendency to stone is, I think, proved by the fact, that calculous complaints are almost unknown in the cider districts. The use of the warm bath is also highly beneficial in the uric acid diathesis, as it promotes the functions of the skin; and the sympathy between the skin and urinary organs is clearly demonstrated from the frequent co-existence of cutaneous eruptions and disease of the kidney. It is seldom that the sediment in the urine consists of pure uric acid; and this is likewise the case with respect to calculi, in which the uric acid is scarcely ever pure.

When alkalies are administered, they should not be taken, as Sir Benjamin Brodie has well remarked, in less than three or four hours after a meal, or they are liable to interfere with the process of digestion, by neutralizing the free acid of the stomach. The quantity of alkali given must also depend upon the peculiarity of the patient's constitution. Should the treatment not prove effectual in preventing the formation of a stone in the kidney, it generally happens that the concreted matter soon passes into the ureter, and along that channel into the bladder; and if the stone be sufficiently small, it may ultimately make its escape through the urethra.

Before the invention of lithotrity, the only means employed for the removal of small calculi consisted in dilatation of the urethra by large bougies, or in their extraction through the urethra by the instrument invented by Sir Astley Cooper, and known as "Sir Astley Cooper's forceps:" by these forceps great numbers of small calculi were, in many cases extracted. But I believe that there is less danger in the use of the lithotrite than in either of the above plans, as the excessive stretching of the urethra, and the frequent introduction of the bougie or forceps seems more likely to set up irritation of the bladder, than the skilful use of the crushing instrument. In three instances I have crushed a stone, and perfectly cured a patient, by one operation with the lithotrite.

The choice between lithotrity and lithotomy is often one requiring considerable judgment on the part of the surgeon; and this is a question in which a knowledge of the chemical nature of the stone must always be of great service: not that the chemical composition of the stone has anything to do with either of these operations directly; but the physical character of the different kinds of stones varies as much as their composition, and that character can be judged of pretty correctly as soon as the composition of the calculus is known. Uric acid, for instance, often occurs in a form in which it easily breaks into pieces under a crushing force; and the crystallized variety of the triple phosphate also crumbles away completely under pressure. By means of the lithotrite it is easy to comminute such stones as these; but there are others which yield with great difficulty to the action of that instrument. The oxalate of lime calculus is of this nature: the tuberculated portions break off readily enough, but the mass of the calculus is crushed with great difficulty; and when it is broken, the fragments are so sharp that they are likely to produce extreme irritation in the bladder, and then a secondary action may be established, in which these fragments become the nuclei of other calculi, or at least cause the deposition of fresh quantities of earthy matter from the urine. Whatever may be the nature of the stone, I think it is always inadvisable to employ the crushing process if there be evidence of a tendency to the deposition of the earthy phosphates. Of course this must be judged of by the urine; and unless the tendency can be removed, it seems to me that the operation of lithotomy should be preferred; for I believe that the incision through the prostate gland causes less irritation than the use of the lithotrite, and the consequent presence of the calculous fragments. The advantage of lithotomy is, that the chief source of irritation is removed at once; and although there may remain the constitutional tendency to deposition from the urine, there would be no nuclei to promote that tendency, and it would be therefore the more likely to be counteracted by therapeutical agents.

Whenever, also, from the diathesis of the patient, the state of the urine, and the examination by the sound, the stone is believed to be of that kind which is crushed with difficulty, the operation of lithotomy is certainly indicated.

With regard to the constitutional condition of the patient, the same considerations would weigh with the surgeon in lithotomy as in lithotrity; and one of the chief points would be, to overcome, before the operation was performed, the constitutional tendency, if any still continued to exist, to further deposition. Generally speaking, the physical character of the stone bears little immediate relation to the operation of lithotomy; but I may say that the kind of stone most suitable to lithotrity is perhaps that most difficult to deal with in lithotomy. The more friable a stone, and the less the cohesion of its particles, the better suited it is to the lithotrite; but such a stone would be more likely to increase the difficulty of the operation in lithotomy, as it would probably crumble and break away when seized by the forceps, and so lead to the necessity of some modification of the operation, in order to get rid of the whole of the fragments. The hardness of a stone can be no objection in lithotomy, unless it be too large to be removed whole, in which case great irritation may be produced in the efforts of the surgeon to break it while in the bladder. I believe that the operations of lithotrity and lithotomy may, in a certain manner, be very advantageously combined. For instance, it sometimes happens that a stone is so large, that, although it may be removed without previous crushing, it requires a very extensive incision through the prostate. In such a case, I think that a strong kind of lithotrite may be introduced through the wound, and the stone easily broken down, without producing so much irritation as would arise from the extension of the wound by the forcible extraction of a large stone. *Guy's Hospital Reports, Vol. VI., October, 1849, p. 2.*

85.—CASE OF STRICTURE ATTENDED BY PROFUSE DISCHARGE.—By H. Smith, Esq., London.

[In this case there was such profuse discharge, that gonorrhœa was suspected. The patient had previously had stricture, and as he completely negatived the idea that it was gonorrhœa, Mr. Smith suspected that he might have stricture remaining. He says:]

I requested permission to examine the urethra, and, on doing so, I discovered two irritable strictures. I told him that this was the cause of the discharge persisting, and that it was necessary for him to come to London every week, to have the bougie passed. I, at the same time, desired him to refrain as much as possible from sexual connexion, and from all other species of excitement.

I need not enumerate the particulars of this case, which was troublesome to treat,—for the urethra was so excessively irritable, that about three weeks after this, I could only introduce, with some trouble, a No. 4 bougie. In a short time however, a good-sized instrument could be introduced, the discharge diminished, and, at the end of two months, I passed No. 12 bougie; all discharge had ceased. He had latterly used a weak solution of acetate of zinc, in order to diminish the irritability of the urethra, and hasten the cure. I advised him to return to me in another month, in order that I might ascertain if the cure was satisfactory. He visited me last week. The urethra admitted No. 12 bougie, and the discharge had never returned.

The points of interest in this case are obvious; it particularly indicates how careful the surgeon should be in giving a decided opinion respecting the nature of a discharge, when the patient is a married man, and denies having placed himself in a position to get infection. It is true, that the surgeon is frequently wilfully imposed upon by his patient; at the same time an educated and sensible man, if he have any confidence in his medical attendant will generally tell the truth.

I am by no means surprised that the discharge in this instance was taken for and treated as gonorrhœa, for the similiarity was so great that it was almost impossible to give any other opinion; for, although it frequently happens that a thin gleety discharge is produced by stricture, one of a purulent or muco-purulent character, exactly like that of a common clap, is rare as an effect of this altered condition of the urethral canal. This case strikingly shows the necessity of examining the urethra with an instrument, if a discharge persists for a length of time, and resists ordinary remedies; for in many such cases the discharge is kept up by the stricture, and unless this be overcome, no permanent cure can be expected to result from remedies by the mouth or by injections; but as soon as the obstruction is fully overcome, the running, whether it comes from the urethra or neck of the bladder, will readily give way. As an instance of the dependence of the discharge upon a stricture, and its rapid departure as soon as this has been treated, M. Leroy d'Etiolles mentions, in his work on stricture, a case of a gentleman suffering under two bad strictures. Here there was such a profuse discharge of thick, mucus-like, false membrane, that the unfortunate patient almost lived upon a perforated chair. This lasted for a year, when the stricture was discovered, and treated properly; and in eight days the discharge ceased, and since ten years has not returned.

Med, Times, Aug, 4, 1849 p. 97.

86.—ACCOUNT OF AN "ANTI-STRICTURE INJECTOR."—By R. Machell, Esq.

[Mr. Machell had a patient with a stricture so irritable that he could not bear the introduction of a catheter or bougie.]

Having previously, (he says,) found much benefit, in some cases of spasmodic stricture, from passing a stream of water into the bladder, which not

only relieved the contraction of the urethra and the adjacent parts, but diluted in an eminent degree both the calculous matter and the acid contained therein, as well as in the connecting passages, a proper apparatus for the purpose was procured, giving an impulse to the fluid suitable to the degree of resistance which the obstructions in the urethra occasioned. A small ivory pipe was employed, of sufficient dimensions to fill up the orifice of the passage of the bladder, which was at the time exceedingly irritable and inflamed, and of just sufficient length to reach the stricture. The strength of the stream of water to be directed into the urethra, and against the strictured part, was regulated to that of an ounce, but could be used much more powerfully, if required. This slight stream could not, at the first attempt be endured, having caused a degree of shivering, and a partial paralysis of the right thigh; yet, notwithstanding the unfavourable sensation, I was confident that a portion of the water had gone through the stricture into the bladder, although it seemed to regurgitate into the basin beneath. I desired him to attempt to pass urine, which he was very reluctant to do, from the pain he had on previous occasions experienced from passing, as before described, only a few drops at a time of thick bloody mucus of an irritating quality; yet he at length consented, and was agreeably surprised on hearing the urine, or rather water pass off in a comparatively powerful stream into the utensil, nearly clear, accompanied with but little pain, and in quantity about two ounces. This occurred at some distance from town, and as I was obliged to return that night, I gave him some aperient medicine, and revisited him on the following day.

I found that in the interval he had voided urine in much less pain, and in a larger stream. The success thus obtained increased his confidence, and enabled me to repeat the operation. The bladder was again injected with water at a tepid degree, but with only about half the impulse. By means of the apparatus, about half a pint of water was introduced; at first, the stream occasioned considerable pain, but, by applying the stop upon the pipe, and suspending the force of the stream the pain subsided, and I was again enabled to turn on the fluid; which was accomplished without any inconvenience, and the whole operation was completed without the necessity of withdrawing the ivory tube even for an instant.

In the space of two months, all the distressing symptoms subsided, and although, from unforeseen causes, there was evidently a disposition of the urethra to contract, yet the same simple means were had recourse to, keeping in mind the regulation of the impulse of the stream, agreeably to the resistance of the spasm, and other obstructions in the canal. The acrimonious urine, and the accumulated mucus, on being diluted, passed off freely without the straining which he had experienced for a great length of time.

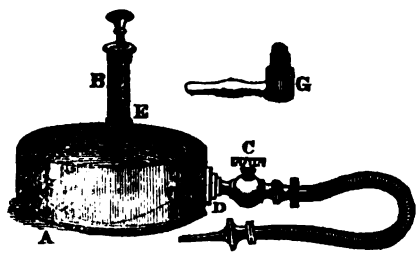
During the space of two years my patient has remained quite comfortable, without requiring any further use of the instrument; and should any return of strictures take place, he will then have recourse to the same process, which was attended with very little inconvenience to himself, and with a success which he never anticipated. It will thus be seen that where the bougie or catheter completely failed, an easy and effectual cure may be attained by the simple application of water administered by means of the "Anti-stricture injector." *Lancet, Aug. 4, 1849, p. 134.*

87.—ON THE TREATMENT OF STRICTURE.—By T. Machell, Esq., London.

[Mr. Machell makes the following observations on the treatment of strictures:]

In the use of distending the urethra by means of bougies, or other mechanical contrivances, however gentle in their application, they cannot fail to cause a degree of stimulus, which, on some urgent occasions, requires to be discontinued until the disturbed state of the implicated organs has been

quieted by medical treatment when the mechanical process of dilatation may again be reverted to with increased advantage. That such a sympathy exists between the strictured parts, which are thereby rendered unfit to perform their office, and some of the viscera, has, by repeated experiments, been sufficiently proved; for in proportion as the membranous lining and the corpus spongiosum urethræ become contracted, these parts are considerably more condensed and thickened into the consistence of cartilage, whilst the coats of the bladder increase in the same ratio in strength, for the purpose, as it were, of giving additional impulses to the urine when impelled through the contracted canal. A stricture of the urethra is frequently in extent only as if contracted with a silk thread, but at times, though seldom, it is about an inch in length. A permanent stricture generally appears to encompass the canal with a small perforation in the centre, and at times the stricture is on one side. The middle of a long stricture is sometimes larger in diameter than at the ends, and frequently the urethra assumes a tortuous direction; or a membrane, denominated a bar, will extend across the canal. All these remarks on the variety of strictures,—which require different modes of treatment,—by bougies, catheters, natron exsiccatum, argenti nitras, kali purum, and unguentum hydrargyri fortius, are introduced in order to show the enormous amount of irritation which would be produced in an already excited state of the urinary organs, where extraneous deposits are of too stimulating a nature to require any addition of inflammatory excitement to remove the cause. With a view of mitigating the existing symptoms by the removal of all unnatural secretions, and relaxing spasmodically contracted canals and passages, the soothing effects of heat and moisture are employed, as being well-known agents for the purpose. Nothing but an easy and perfectly controllable method of administering them is wanted, a desideratum which I have found attained by means of the instrument referred to, a diagram of which may in some measure serve to point out its construction and mode of application.



A is a vessel made sufficiently strong, and of material impervious to air in a condensed state; B, a syringe for compressing atmospheric air into the said vessel; C, is a stopcock which screws into the opening at D, and, in conjunction with the valve E, serves to secure the injection, after being poured into the vessel through the opening, and to regulate the stream by diminishing or increasing the power from one drachm to the weight of several pounds; G, is one of the vessels for containing compressed air, or any of the gases. When the injector is to be used, unscrew the stopcock, C, and fill the vessel quite full of the liquid to be injected, then return the stopcock into the opening tolerably tight. The air-syringe, B, must now be screwed into E, which, being worked to the extent of twenty or thirty strokes, renders it ready for use. On introducing the ivory pipe in the usual way, the injection can be administered with any required degree of force. and in any position of the body, without the aid of a second person, and without the introduction of the slightest particle of atmospheric air.

☞ *Lancet, Aug.* 25, 1849, *p.* 203.

88.—ON THE DANGER OF USING GUTTA PERCHA CATHETERS.—By Charles Hawkins, Esq., Surgeon to St. George's Hospital.

[Mr. Hawkins states that however carefully catheters of gutta percha may be used, yet they are liable to break, on account of the mode of their construction. He says,]

The catheter is made, it would appear, of a slip of gutta percha nearly an inch wide, and of the necessary length for making the catheter, which is twisted round a stilette, so as to make the edges of the slip join together, in which position a moderate degree of heat makes them cohere to constitute a tube, when the stilette is withdrawn.

Of course, if this slip is screwed up in one direction, the edges are pressed together, but when twisted in the contrary direction, unless made to cohere very firmly, the catheter is readily outwisted into the original long narrow slip of the material employed, and probably the warmth of the body facilitates this separation of the edges of the slip. A second catheter, which my patient used on only one occasion, was thus opened at one point of junction, and was easily unrolled for its whole length; others are not so easily broken up, but all must be dangerous.

[In illustration of the danger resulting from the employment of these instruments, Mr. Hawkins relates a case in which the patient broke the catheter in his bladder about four inches from the point, and the fragments were not extracted without considerable trouble.]

Med. Gaz., Oct. 26, 1849, p. 699.

89.—VASCULAR TUMOURS AT THE ORIFICE OF THE URETHRA.—By H. B. Norman, Esq., Surgeon to the Marylebone General Dispensary, &c.

[In addition to his own observations upon the subject of these tumours, Mr. Norman gives an able *resume* of the opinion of various authors who have previously described them. He gives the following description by Sir Charles Clarke:]

"The tumour," he says, "is *seldom firm;* of a florid scarlet colour; if violence be offered to it, blood of the same colour is effused: it is somewhat *granulated*, exquisitely tender; appears on accurate examination to shoot from the inside of the urethra; seldom acquires a large size; its attachment is slight, and it is so moveable as to appear almost like a detached body lying upon the part. It gives rise to great suffering during micturition, and to a vaginal discharge. It is common to the married and the unmarried, most frequent in the young." The tumour was never seen by Sir Charles Clarke "in a person above the middle age." He notices that a similar kind of disease existed occasionally "in the interior of the canal, giving rise to the symptoms of tenderness on pressing the urethra, and a general swelling of the part;" and refers to such a case successfully treated by Sir James Earle by means of large bougies.

In most systematic works on diseases of the genito-urinary organs, and especially in those which treat of the female organs, these tumours are described; and in those published since Sir Charles Clarke's work, the name given by that author is adopted.

Thus Burns says:—"Excrescences may, notwithstanding the opinion of Morgagni, form in the course or about the orifice of the urethra, and generally produce great pain, especially in making water, on which account the disease has been sometimes mistaken for a calculous affection. The agony is at times so great as to excite convulsions; and it is not uncommon for the patient to have an increase of her sufferings about the menstrual period. The tumour is vascular, florid, moveable, and exceedingly tender. When excrescences grow about the orifice of the urethra, they are readily discovered; but, when they grow high up, it is much more difficult to ascertain their existence." Dr. Baillie says "they cannot be known but by the

sensation of a catheter passing over a soft body." Burns refers to many interesting cases, hereinafter to be cited. The late Dr. David Davis makes mention of these tumours, and gives a most interesting and complicated case in illustration. Sir. B. Brodie limits their size to that "of a pea, or horsebean." He has met with many instances of them.

Dr. Ashwell thus treats the subject:—"This is by no means an unfrequent affection of the mucous membrane of the urethra. It usually attacks the young, whether married or single; is very rarely seen after the cessation of the menses; consists of a small *granular* tumour, generally pedicalated and moveable, attached to one part of the margin of the meatus, or just within the urethra, *whose two prominent characteristics are great vascularity and exquisite sensibility*. Sometimes these growths are not tmoveable, but appear like several raised coalesced granulations, or occasionally two or more isolated independent ones may be seen near together. Every now and then they extend partially along the urethra, and may even be located at the neck of the bladder. They are covered by a delicate *pale* mucous membrane, which is broken on being touched during examination, and blood exudes from the soft, feeble, and injected capillaries. . . . . If they interrupt or come in contact with the stream of urine, the act of passing water causes intense pain, and this is usually the first and most constant symptom of the complaint. After a time the urethra and bladder become irritable, and the frequent desire to micturate is suppressed by the dread of the pain which it excites. Sexual intercourse is intensely painful, and is therefore obliged to be suspended. Walking exercise is attended with suffering, and in fact any movement of the vulva, by slightly displacing or pressing upon the growth, produces instant pain. Leucorrhœa, and various sympathetic pains of the pelvis, loins, &c., are mentioned as accompanying the tumour.

Mr. Safford Lee has met with these tumours "in the young and old." The largest example he had seen (as large as a date) was in a woman above forty; and he had one under treatment much older. He notices the occasional participation of the nymphæ in similar disease, its occasional extension along the urethra to the bladder, and also that the tumour is frequently divided at its extremity. Amongst the symptoms to which the tumour gives rise, he says, "One patient I saw had pains down the inner side of the thighs to the knees; and Professor Simpson told me of one case where pains in the soles of the feet were complained of."

Boivin and Dougés describe them as "fungoid tumours," occasioning great inconvenience in micturition—formed on the meatus, the borders of which orifice concur irregularly to their formation, rounded, though often granuloes, varying in size from that of a pea to a cherry. It will be seen that the urinary passage of the female is, in its whole extent from the external orifice to its termination in the bladder, liable to become the seat of excrescences, and that though the orifice is the most frequent seat of these growths, they are not very uncommon in the interior of the canal.

Though entitled to one common appellation, from their vascularity, they differ much in some other respects. Thus, in size, they may vary from a simple large granulation to a tumour as large as a date, or as a turkey's egg: in consistence, from something scarcely exceeding the solidity of jelly to a considerable degree of firmness; in external surface they may be perfectly smooth or granulated; in form flattened and sessile, rounded, and growing irregularly from the whole margin of the meatus, or pediculated and pendulous; sensitive to the highest degree, or as in one instance not even sensible. Their sensibility bears no relation to their size, unless it be in the inverse ratio; the smallest excrescence certainly gives equal pain and distress with the largest.

[One of these excrescences having been examined microscopically by Mr. Quekett, he gives the following account of it:]

A vertical section through the middle of the mass showed several papillæ

of various sizes, which were very vascular, and surrounded by an investment of cuticle, which with the papillæ, made up the entire mass of growth; at the part where the papillæ were situated, the growth was smaller than at the opposite extremity, as though it had been attached by a constricted neck or pedicle. The papillæ, no doubt, were largely supplied with nerves, as well as blood-vessels, but their presence could not be detected by the microscope. The growth may be said, then, to consist of hypertrophied papillæ, invested with a thick layer of cuticle, which projected from the general surface of the mucous membrane in a wart-like form. This connection with the papillæ will serve to explain the extreme sensibility generally possessed by these tumours.

[Mr. Norman concludes with some useful observations on the treatment of these tumours. He says,]

The most constant symptom of the disease is pain in the urethra, greatly augmented during micturition, which is sometimes suppressed by dread, and sometimes excessively frequent from the extension of the irritation to the bladder; augmented, also, by all movements of the vulva, by coition, and during the menstrual flux. A muco-purulent discharge from the vagina accompanies the growth, and there are occasionally severe sympathetic pains in the loins, pelvis, hips, and inside of thighs, and a discharge of blood, leading to the idea that the case is one of calculus of the bladder. To prevent this mistake, which has been often made, whenever the more common symptoms are present, and *not accounted for by a morbid condition of the urine*, careful examination of the vulva should be made before an opinion is given.

The external characteristics of these growths are sufficiently clear to prevent their being confounded with other swellings—as verrucæ, prolapsus of the bladder, eversion of the mucous membrane of the urethra, or varicose tumour of this part, and still more with prolapsus uteri; a mistake which, in one instance, has nevertheless happened.

The treatment required is strictly local, and consists of such means as entirely destroy the growths and are most likely to prevent reproduction. These are cauterization, caustics, astringent lotions, excision, ligature, and pressure by bougies. They are all applicable in different cases. If the growth is single or double, and not attached by a very broad base, it may be removed either by excision or ligature. The former has, perhaps, the most numerous advocates, and among them Sir B. Brodie and Dr. Ashwell, and was practised in several of the cases cited in this paper. To the latter I give a decided preference, along with Sir Charles Clarke, in consequence of the serious hemorrhage that often follows excision. In either case, a powerful caustic should be applied to the point from which the growth has been removed, to prevent its reproduction.

The actual cautery or caustics are only applicable primarily to very small excrescences near the orifice, and to those which answer to the description of Dr. Ashwell—*i. e.* having the appearance of several raised coalesced granulations, or two or more isolated ones; as a secondary means, they are applicable, as before mentioned, after excision or ligature. The more powerful the caustic, if proper care be used to prevent its spreading, the less suffering it produces and the more quickly it effects its purpose. Potass, nitric acid, and per-nitrate of mercury are the best. Nitrate of silver gives excessive pain, and is slow and inefficient. *Monthly Jour., June*, 1849, *p.* 795.

190.—ON VARICOCELE.—By M. VIDAL DE CASSIS.

M. Vidal de Cassis has frequently occasion to treat affections of this kind at the Venereal Hospital. The process which he employs in the treatment is peculiar to him, and may deserve attention. He denominates it "*enroulement*," which we may translate by the term "torsion." A straight, lance

headed needle is armed with a very flexible silver wire, of the diameter of a pin. The patient is in the upright position, and the surgeon commences by separating the varicose veins from the vas deferens, which he pushes backwards and inwards. The veins are grasped by the thumb and index finger with a fold of skin, and the needle is passed behind the vessels, being guided from the index to the thumb of the operator, and carrying the silver wire with it. The engorged vessels are now allowed to fall back, and the index and thumb of the operator pinch up the skin in front of the enlarged mass of veins, and another silver wire, but of smaller diameter than the former one, is passed in the same manner.

The patient is now placed in bed, the ends of the wires are cut off, leaving from fifteen to twenty centimetres, and the surgeon proceeds to twist the ends, which gradually brings the wires to bear on the chord; but as the torsion is continued, the veins are twisted round the metallic loop, and the testicle becomes elevated in proportion to the torsion. Finally, a small plug is placed on the portion of skin between the two orifices made by the needle; the ends of the wires are twisted on this plug, and the torsion increased by means of a new instrument, which M. Vidal has just invented, and which Charriere has executed with his usual skill. The advantages of this method, according to M, Vidal are, that it exposes the patient less to the chances of relapse, and is less painful than any other. The treatment usually lasts for three or four weeks. *Med, Times, Aug.* 14, 1849, *p.* 93.

91.—AMPUTATION OF THE PENIS BY MEANS OF THE ACTUAL CAUTERY. By M. Bonnet.

The actual cautery, has been occasionally resorted to for the purpose of arresting dangerous hemorrhage after this operation; but during the last five years M. Bonnet, of Lyons, has employed it for the execution of the amputation itself, by which means he not only prevents hemorhage, but what is of more consequence, phlebitis, and purulent absorption. He describes his success as very gratifying. After heating the iron, the patient is subjected to the influence of chloroform, and wet compressers are disposed around the penis. An assistant holds the organ by means of a forceps, and the surgeon, standing on the left of the patient, gently applies the iron perpendicularly to the axis of a healthy portion of the back of the penis, the division of the fibrous structure often requiring more than one such application. This accomplished, the iron is gently passed into the the corp, cavernos, so as to coagulate the blood of its vessels, and the section is completed without loss of blood: four or five applications of the iron being wanted in all. When the cancer extends to the scrotum or abdomen, the operation is more tedious, as the ramifications must be followed by the cautery, though the pubis itself has to be reached. If the inguinal glands are affected, they should be removed by a bistoury, and the cautery applied. There is generally far less reaction than after ordinary amputations of the penis. In about a week the eschars begin to be detached in fragments, and they have all fallen in fifteen or twenty days. By this operation, then, we can much more readily act on healthy tissue. we are enabled to attack cases the knife could not reach, and we prevent hemorrhage. —*Gazette des Hopitaux*, No. 18. *Brit. and For. Med. Chir. Rev. July*, 1849, *p.* 292.

92.—A NEW OPERATION TO SUPERSEDE CASTRATION.—By C. Taylor, Esq., Alfreton.

[Mr. Taylor having observed that the process of "sow-gelding" consists not in the removal of the ovaries, but in the simple division of the fallopian tubes, advises a parallel operation, viz. the division of the vas deferens,

(or the removal of a portion of it), to supersede castration in the male. He states that he has performed this operation successfully upon a dog.]

Lancet, Oct. 27, 1849, p. 447.

93.—REMARKS UPON THE ORIGIN OF VENEREAL DISEASE.—By F. C. SKEY, Esq., F.R.S.

[Mr. Skey thinks that a great many of the prevailng notions upon the subject of the venereal disease are erroneous; and, among the rest, those usually attributed to Mr. Hunter. He finds that ninety-nine out of one hundred venereal sores are better cured without mercury than with it. Amongst those forms of sore which Mr. Skey cannot cure without mercury, is one characterized by intense induration, to which induration, ulceration succeeds; this form of chancre, is, however, according to Mr. Skey's experience, extremely rare. Mr. S. goes on to say:]

The first principle I wish to establish is this, that the very large majority of venereal sores are what may be termed *simple sores*, and that such are the effects of a poison *of the least active and virulent kind*. That the poison becomes early exhausted in the progress of the sore, which assumes a simple inoffensive form as soon as the first stage, or that of ulceration, has passed away. This sore, presents, however, peculiar characteristics throughout its progress, which alone distinguish it from ordinary sores. At present I wish to say a few words on the origin of venereal sores. The opinion almost invariably prevails, when a patient exhibits a primary sore on the genital organs, that that identical sore has been obtained from the infected source. I believe there is no opinion more erroneous. *Venereal sores are*, for the most part, *self-generated* in the male. A sore may become the product of any form of irritating secretion in the female, as may gonorrhœa also. This is an opinion I have long entertained, and every year's experience more strongly confirms my conviction of its truth. I am prepared to affirm my belief that, having intercourse with a woman without venereal disease, a man shall acquire one or more venereal sores, of one or other character, or even gonorrhœa. Unless this doctrine be founded in truth it would be difficult to explain the existence of venereal disease at the present day; but I am satisfied that it is founded in truth, and a most important doctrine it is. The records of surgery, if consulted, clearly point to the fact; I appeal to the writings of Abernethy, Rose, and Evans, and others. Mr. A. gives at length the case of a gentleman, who having visited the mistress of his friend, got a bad venereal sore, on three several occasions. All this time, a period of nearly three years, this woman was domesticated with the man who kept her, and was never suspected by him to be the object of venereal disease. Mr. Rose tells the well-known story of a Portuguese opera dancer who, undisturbed in her professional avocations, gave venereal disease of a formidable kind to a host of British officers during the Peninsular war, who had connexion with her. Mr. Evans, from whose excellent work on venereal disease I also quote from memory, relates the fact, that whilst the army of occupation resided at Valenciennes, he had more than 100 soldiers in the hospital from venereal causes, and that the usual examination of the women of the town, at the moment exhibited but three examples of the disease among the entire sisterhood.

Within the last three months, a medical man, who consulted me relative to a sore, volunteered the opinion, that the woman in question, could not be the subject of disease. Three several times did he examine her, and detected nothing. A patient in St. Bartholomew's Hospital, the subject of rheumatic gonorrhœa and articular rheumatism, declared that he had got the disease from his wife, and that he would drive her out of the house on his recovery. I asked him, "Have you any other reason to suspect your wife's fidelity beyond your having discharge." He replied, "No." "Then let me examine her, for I dare say she has nothing amiss." I did so. I

found nothing—no disease of any kind beyond what is commonly found—a slight degree of leucorrhœa. I have elsewhere recorded a case of severe gonorrhœa, contracted by a medical student who never had intercourse but with one person, and that a young girl, living under her mother's roof, whom he seduced. On one occasion, by some accident, he had intercourse with her before her catamenia had ceased. But these cases are not necessarily confined to persons of the humbler station; a sprinkling of them exists throughout society.

A gentlemen well and intimately known to me attained twenty-seven years of age without ever having contracted venereal disease. He moved in a circle which associated him with women of rank and station. He accomplished an interview with a young lady during the absence of her family, who *at the last* resisted him successfully. He showed me, within a few hours of the transaction, a large excoriated surface on the inner side of the prepuce and glands, the result of violence. On the day following, he had intercourse with a married woman in the same rank of life, having all the external indications of perfect health. I asked him whether, as a man of the world, he had the smallest reason to think the latter lady could be the subject of disease. He thought it quite impossible. Now, in truth, it is a good way from impossible, but it was highly *improbable*. So far as he could make inquiry he did so, and the inquiry confirmed his opinion.

The result of the second act was increased inflammation of the already abraded surface, and excessive pain. Early on the following morning, he called on me, and, among other questions, asked me whether I considered him to have the pox? and especially, whether he should have secondary eruptions? I answered unhesitatingly,—No. The wound, however, became phagedænic, and sloughed, and I applied nitric acid, and it sloughed again; and, in consultation with Mr. Welbank, strong nitric acid was resorted to. A large slough came away, and exposed a sore of formidable dimensions; and while this sore was in progress of healing, viz., in six weeks from the date of the poison, this gentlemen was rewarded by an *intense phagedænic eruption from head to foot*. He was now subjected to repeated salivations by mercury, having placed himself under the charge of another surgeon, and was twelve months under treatment. Now, in reasoning on this and similar cases,—for they all carry the same evidence,—I would ask, Is it probable, or even possible, that these women have disease without being conscious of it? In the case quoted from Mr. Abernethy's work on "Diseases resembling syphillis," is it possible that this woman had sores, or even discharge, for three years without being conscious of it. Is it reasonable to imagine that three women, in the cases reported by Mr. Evans, an acute observer, truthful in his relation of facts, and ingenious in his reasonings upon them, could have communicated disease to 100 men; or, in the case I have last related, is it more probable that disease existed in this lady unsuspected of herself, or of another, who would have contracted it. It seems to me a just inference, that if a woman is unconscious of disease, having all the attributes of health, her husband being equally free, that the woman has not disease; and I believe such a woman, and in this condition is competent to give venereal disease to a third person having intercourse with her, either through her own secretions possibly existing at the time in excess, or through the remains of catemenial discharge. At all events, that the secretions of the two persons combined can produce and develope a *tertium quid*, which may have all the attributes and properties of venereal poison—a poison more readily developed in the person of a man having occasional than having frequent intercourse with the woman in question. Of course, I do not dispute the fact that disease really existing in either sex may be readily communicated from one person to another, though I doubt its being necessarily developed in the same form. Though gonorrhœa will generally produce gonorrhœa, the character of the sore is not by any means necessarily identical with that which produced it.

Now, in these opinions, I am happy to say I do not stand alone. I am persuaded that many thinking men, if they have not adopted them entirely, are prepared to extend their belief to the whole doctrine; and I do honestly believe that such convictions would become universal in the profession, were it possible to divest our minds of the impressions of early education. *Med. Gaz., June 2., 1848., p. 601.*

DISEASES OF THE SKIN.

94.—ON THE LOCAL TREATMENT OF CHRONIC ECZAMA AND IMPETIGO.—By Dr. J. Hughes Bennett, Professor of the Institute of Medicine, Edinburgh.

[In *acute* cases of these diseases, Dr. Bennett remarks, the ailment will generally be found associated either with a scrofulous taint, or with the oxalic, the lithic, or the phosphatic diathesis, and must be attacked by the constitutional treatment proper in these several instances; local treatment being of very subordinate importance. Of the *chronic* cases of impetigo and eczema, Dr. Bennett says,]

It is in cases of this kind that local applications are essential, and constitute the chief part of the treatment, whereas, in more acute cases, although they may be very useful, they are secondary in importance to internal remedies. The application I have employed for the last nine years has been a solution of 3ij. of the subcarbonate of soda, in a pint and a half of water. But an alkaline lotion in itself, applied from time to time, as is most commonly done, will not prove of any great service. I have found it necessary to place lint saturated with the solution over the affected parts, and to cover the whole with oil-silk, in order to prevent evaporation. Keeping the surface moist seems to me a necessary part of the treatment. The usual effect is soon to remove all local irritation, and especially the itching or smarting so distressing to the patient; to keep the surface clean and prevent the accumulation of those scabs and crusts, which in themselves often tend to keep up the disease. After a time, even the indurated parts begin to soften, the margins of the eruption lose their fiery red colour, and merge into that of the healthy skin, and finally the whole surface assumes its normal character.

I am quite satisfied that this local treatment is far superior to the stimulating ointments and lotions, which are so frequently used one after the other, in the hope of overcoming these obstinate forms of eruption. Many of them, indeed, only seem to augment the disorder. In these cases there is an increased exudation from the skin, not only of sebaceous but of purulent matters. Alkalies, we know, have the property of dissolving these, and acting as a calmative and emollient to the irritated part. Their constant action on the skin, therefore, in the manner I have described, may easily be imagined to be productive of benefit. But if, as is usually done, alkaline lotions and baths are only employed from time to time, they remove the sebaceous matter, leave the skin dry and harsh, and thus these applications often irritate. Keeping the surface covered with moist lint on the other hand, while it serves to protect, removes the results of exudation and prevents incrustation.

I have now treated a great number of persons affected with chronic eczema and impetigo, and have succeeded in curing them in this way, after almost every other kind of local application had been tried in vain.

Monthly Journal, Aug. 1849, p. 903.

95.—ON THE TREATMENT OF ECZEMA.—By Dr. T. H. Burgess.

[Speaking first of *eczema capitis*, Dr. Burgess reminds us of several circumstances which should be borne in mind in the treatment of all erup-

tions of the scalp in children. First, he says, we should remember the different forms of eruption peculiar to robust and scrofulous children respectively, as, owing to the state of the general health very different treatment may be required. Secondly, in inflammatory eruptions, we should not use stimulants except in the most chronic stages. Thirdly, when there is much cutaneous discharge, we should be very careful not to suppress it too suddenly. Fourthly, in all affections of the scalp, the hair should not be shaved, but closely cut. And lastly, as a general rule, all greasy applications should be abandoned. As regards the disease under consideration, *eczema capitis*, the treatment, especially when the affection is chronic, should be principally constitutional, and should consist of a course of mild tonics and alteratives. The local treatment, in the first instance consists in the usual measures of cleanliness. Dr. Burgess tells us :]

When circumstances are favourable, and the proper time arrives for arresting the discharge, it should be effected in as gentle a manner as possible, so as not to derange the internal organs; and for this purpose I prefer mild alkaline lotions of the carbonate or bicarbonate of potass, and the frequent use of the simple or emolient bath, in which the patient, unless very feeble, should remain at least one hour: the usual method of keeping the patient in twenty minutes or half an hour, being useless.

If there is an abundant serous exudation, and much smarting in the parts, half a drachm of sulphuric acid in a pint of barley-water will be found very useful. The patient should commence with small doses, and take a little cold water after each dose, till the stomach becomes accustomed to the acidulated drink. If the discharge continues undiminished, and the eruption does not appear to be affected by those remedies, we must have recourse to alteratives, as sarsaparilla and hydriodate of potash, to active purgatives, if the patient is strong, and to lotions of the nitrate of silver, or of the bichloride of mercury. If there is inflammatory tendency in the parts, the application of a few leeches behind the ears will be necessary.

Chronic eczema of the legs in adults, and especially when the patients are of a debilitated or broken down constitution, are generally very difficult and unsatisfactory cases to deal with. The practitioner seldom sees the case until the disease is so fully established, and, as it were, ingrafted on the limb, that the habitual condition of the parts seems to be that of subacute erysipelas, with puffiness of the ankles, and a swollen if not varicose state of the veins; all denoting a sluggish or impeded circulation in the extremity. This state of things not infrequently terminates in that form of indolent ulcer of the legs so familiar to practitioners, and so difficult of cure.

For cases of this description I have found the application of the vapours of sulphur and iodine, in combination, the most certain and effectual remedy, when assisted during the interim of the applications, by bandaging the limb from the foot upwards.

My attention was directed several years ago, by Mr. Alfred Walker, to a preparation of sulphur and iodine, the vapour of which is an admirable local application in several cutaneous diseases. At that period I witnessed its marked benefit in many cases of chronic ulcer, under Mr. Walker's care. These remedies combined seemed to possess healing properties which are not manifested when they are used separately. When employed judiciously, and in appropriate cases, they appear to alter the vitality of the morbid parts, and to induce a state of healthier action. If the eruption is indolent, they gently stimulate the diseased surface into greater activity; and by regulating the strength of the remedy, according to the nature of the case, and the object in view, the most salutary effects may often be derived from its use. I have seen cases of lepra of several years' standing, which had resisted every other treatment, cured in a very few months by the application of the vapour of sulphur and iodine. It is particularly applicable to squamous and tubercular diseases of the extremity, to chronic

eczema, and ill-conditioned ulcers of long standing. It may be administered in this form—℞. Sulphuris, ʒiij.; hyd. sulph. rubri, ʒij.: iodinii, gr. x. M. fiant pulv. sex.

One of the powders to be used in the following manner three times a day. If the disease be seated on the limbs, a tin case or even a common jar, which will answer as well, provided it be large enough to hold the limb, should be procured; a heated iron is to be placed at the bottom of this apparatus, with a grating above it to protect the foot or hand. One of the powders being placed on this heated iron, the limb is to be instantly put into the bath, the mouth of which should be covered over to prevent the vapour from escaping. The limb may be continued in the bath for from fifteen to twenty minutes, according to circumstances. In the course of a day or two the proportion of iodine may be increased; for example, thirty grains of iodine, and at a later period double the quantity, may be incorporated with an ounce and a half of the flowers of sulphur, to be divided into twelve powders, and used in the same manner as the former. I do not mean to extol this agent as a specific for the cutaneous eruptions indicated above; nevertheless, from what I observed both in Mr. Walker's practice, with reference to ulcers, and in my own with regard to skin diseases, I think it is worthy the attention of practitioners, and that it will be found a very efficacious remedy. *Medical Gazette, June* 1, 1849, p. 934.

96.—ON THE NATURE AND TREATMENT OF ACNE.—By Dr. T. H. Burgess.

[Dr. Burgess makes the following interesting observations upon this very annoying affection.]

Acne is the result of chronic inflammation of the sebaceous glands, in which the hair follicles are more or less involved. The sebaceous matter becomes so inspissated that it cannot be discharged. It necessarily obstructs the follicle: inflammation of this follicle ensues, by which it is ultimately destroyed; a pimple is formed, and is soon followed by the formation of matter. One of the leading characteristics of this malady is, the inspissated condition of the sebaceous matter. This abnormal alteration takes place, not in the follicle by which the matter is discharged, but in the gland where it is secreted; and when we bear in mind the intimate association that exists between the hair follicles and sebaceous glands, it is not difficult to see that inflammation of the latter must necessarily involve the former, more or less: that the lesion originates in the sebaceous glands, and is subsequently extended to the follicles—both being invariably involved—is a position, I believe, which is now fully established.

Acne punctata derives its name and character from a small black spot which may be seen on the summit of each pimple. The indurated deposit is the result of follicular hypersecretion. and the characteristic black spots are simply the effects of exposure of the sebaceaus matter at the mouth of the follicles to the carbonaceous matter contained in the atmosphere. These discolorations are most numerous on the cheeks, especially on the ala of the nose, and can be felt by passing the finger gently over the parts. It was in the black indurations that M. Simon announced the existence of parasites; but the severest form of the disease is

Acne rosacea—the *couperose* of French writers. This variety differs in its anatomical element from the preceding, inasmuch as the disease involves clusters of follicles instead of individual ones, and at a later stage depots of matter occupy the place of these disorganized follicles. Acne rosacea occurs most frequently in persons of mature years, whereas the *simple punctata* are commonly met with in youth, especially in females, producing great disfiguration of the face. It usually appears in the form of a number of red spots on the nose and cheeks: these spots are accompanied by a sensation of heat and tension, which gradually increases under the influence of certain kinds of food of high temperature, and of vinous and spir-

ituous drinks. Pustules soon form at the summits of the morbid eminences. The parts affected become the seat of a kind of chronic inflammation; the skin is swollen and injected, and assumes a violet tint; the superficial veins are often dilated and varicose, and when all those morbid alterations are present at the same time they give the countenance an extremely disagreeable and repulsive appearance. The disease may assume a still severer form than this: in the event of which the inflammation extends more deeply into the cutaneous structure; the pimples are more numerous; the pustules are frequently renewed; the process of suppuration is imperfectly performed, and the prolonged inflammatory action produces a degree of induration in the sebaceous follicles, forming true cutaneous tubercles. The cellular tissue now becomes involved, and the variety called *acne indurata* is the result.

Causes.—The causes of this eruption are various, and depend very much on the period of life at which it occurs, on certain peculiarities of constitution, as well as on the general state of health. For example, *acne punctata* almost invariably attacks young and healthy persons; whilst *acne rosacea* in the vast majority of cases attacks individuals advanced in years—more especially females at the critical period. As a general rule, acne occurs in females more frequently than in males, and this peculiarity is intimately associated with the condition of the uterine function. The simple form of the eruption frequently attacks young girls at the period of the first menstruation; whereas, as already stated, the severest variety—acne rosacea—is usually met with in women at the turn of life. Besides, when the menses are suppressed between these periods, or materially deranged, one or the other of the varieties of acne is almost certain of making its appearance. Acne rosacea may also depend on other causes; as, for example, gastric or hepatic disorder, high living, violent mental emotion, the use of cosmetics or irritating lotions, &c. It is sometimes hereditary. It is worthy of remark, that when acne occurs in youth, it generally appears in individuals of sanguinous temperament, whilst it commonly attacks persons of a bilious habit of body when it occurs later in life. Some persons are predisposed to the disease from certain peculiarities in the original formation of the skin, and the size and disposition of the follicles about the face, especially the variety called rosacea. In such cases disorder of the chylopoetic viscera, or of the uterine functions, will be sure to bring on an attack of acne.

Treatment.—The first points to be inquired into before commencing the treatment of acne, are the state of the functions, and the general condition of the system. Acne being a mixed disease, depending partly on local peculiarity in the original formation of the skin, and partly on the functional disturbance, it is obvious that unless we take into account at the commencement, the etiology of the complaint, we cannot possibly lay down a rational method of cure. An exclusively local treatment would be as unavailing as empirical; and to confine ourselves to constitutional remedies alone would be equally irrational and erroneous. The application of those general symptoms referred to in the introductory remarks is specially indicated in the treatment of acne; and it is only by a due consideration of these that an effective method of cure can be prescribed.

Med. Gaz. Aug. 24, 1849, p. 314.

97.—CASES OF PSORIASIS TREATED BY ARSENIC.—By S. Griffiths, Esq., late House-Physician to King's College Hospital.

[Mr. Griffiths gives several cases of psoriasis treated by arsenic, as confirmatory of Mr. Hunt's views in regard to the efficacy of this remedy. The first case was that of a boy aged nine years; liquor potassæ, nitro-muriatic acid, &c., had been given internally, and various local applications used, but only with temporary benefit, the disease soon returning. The following report is given:

May 29th, 1847.—At present there are numerous small patches about

the trunk: others on the arms, spreading as it were from the elbow-joints on either surface; the largest are scattered on the anterior part of the knees and legs; the patches are much raised, scaly, and itchy, which induces the boy to scratch, when an ichorous fluid is discharged, forming a hard cake over several of them. The other functions appear healthy. Ordered, Fowler's solution of arsenic, a drachm; distilled water, seven drachms. Mix. Forty minims to be taken, in water, thrice daily.

June 19th.—A marked change in the character of the eruption has taken place; it is paler, less scaly, and there is a total absence of the irritation which so much annoyed him a fortnight since. No fresh patches have appeared, nor are there any unfavourable symptoms from the use of the arsenic; the only indications of the system being under its influence are the amendment of the disorder, and an almost imperceptible inflammation of the conjunctiva.

He continued the same treatment up to July 15th, when all trace of the disease, with the exception of a slight discoloration of the skin had disappeared.

Feb. 22nd, 1848.—No return of the eruption; the skin is quite free from spots or roughness.

March 30th.—Two small spots have shown themselves on the right knee, he recommenced taking the drops a fortnight since. The spots are now almost gone. To continue the arsenic, in four minim doses, for a month longer.

Feb. 1849.—The boy is well, and entirely free from his former complaint, of which he has had no return.

[The next case was a very inveterate one, occurring in a woman 47 years old.]

Dec. 16th, 1847.—The state of the digestive organs having been rectified by small doses of blue pill and colocynth, five minims of Fowler's solution were given with the food three times a day; the sores dressed with spermaceti cerate and bandaged; to have plain, but nutricious diet.

Jan. 14th, 1848.—The eruption is already presenting signs of amendment, being less irritable and scaly; the conjuctiva is affected, and she has a slight attack of gastritis, to which she has always been subject on the disappearance of the eruption, though never when it was fully out. Thinks herself stronger; appetite indifferent; tongue clean; bowels regular. Continue the arsenic.

Feb. 12th.—Since the last report, there has been a much more marked improvement. The eruption generally is fading, and does not cause so much annoyance; there are no fresh patches; the varicose veins on the legs are better; she has more appetite; no return of gastritis; conjunctiva is still injected, but not sufficiently so to cause annoyance.

March 15th.—She feels herself much better; the scaliness and prominence of the disease has left in many places; she can now rest comfortably, as she feels no inclination to scratch; conjunctiva still affected; she has no gastritis; the tongue is clean; bowels regular; appetite good.

April 16th.—The whole diseased surface is free from scaliness; the ulcers on the legs have been for some time healed; the varicose veins are less distended; and she can wear her shoes, which she has been unable to do for some time previously. Repeat the medicine.

June 14th.—Health appears completely restored; the only trace of eruption is the brown state of the skin, which otherwise seems to be quite sound.

The arsenic was continued in four minim doses, for three months longer, when the discoloration of the skin had disappeared.

December.—No reappearance of the disease.

I cannot forbear offering a few observations on some of the principal points in the cases above related, especially with regard to the mode of administering arsenic. This medicine, prescribed by others, has frequently been productive of great benefit in the cure of chronic skin diseases, but

no author is to be found who has met with such marked success in its use as Mr. Hunt. At its first introduction, as indeed often happens with other agents, its influence was decided in the hands of many. Not so in later cases; and many practitioners have, by degrees, come to lose all faith in it. This may, I think, be readily accounted for. A man unaccustomed to arsenic would be very cautious in prescribing it, and this very fear would lead him to use it in something like the manner in which its beneficial effects are most apparent. As however, his confidence in it grows stronger, and his fear of its baneful effects subsides, he is induced to give it in larger doses, hoping more quickly to eradicate the disease; this not only interferes with its proper action, but also causes it injuriously to affect the system.

Arsenic should never be given when there is any inflammatory action about the system, otherwise this state is sure to be increased; all the functions must first be brought into a healthy condition. Whatever be its *modus operandi* in the cure of skin disease, my experience goes to establish the tonic action of arsenic. Under its uses alone, and without any alteration in diet or residence, I have seen marked improvement, not only in the disease, but in the general health of the patient; these, in fact, seem usually to go hand in hand. Herein is shown its specific action, as distinguished from other tonics; these, when exhibited, cause improvement of the health, but exert no apparent influence on the eruption. I am aware that in this opinion I differ from one of our chief authorities, Dr. Pereira, who, though he has tried extensively, and with his attention directed to this point, has been unable to satisfy himself of its right to be classed as a tonic; the appetite of his patients sometimes improved whilst taking it, in no other respect was its tonic action shown. Vogl, (Pharmakodyn,) and many others, have arrived at the opposite result.

And here I would advert to the common mode of giving arsenic—i. e., in increasing doses. What tonic could be given in such a manner without danger of producing severe constitutional disorder? It is the peculiarity of this class of medicines, that their action is so gradual as to be almost imperceptible, days, or perhaps weeks, being required to show any decided effect. Thus is it with arsenic; though its action is more manifest from the complaint being external. Arsenic ought, therefore, to be given in moderate, or what might be called tonic doses, at first, until the system comes under its influence; these must be diminished, if it affects the patient too severely. The action of arsenic seems to be more direct on the tegumentary tissues, the skin, and mucous membranes, and its influence is nearly always first manifested on the tarsal conjunctiva; hence we have a ready guide to its exhibition. The degree at which we wish to arrive, is a very slight injection of this membrane; if it goes beyond that point, and more severe irritation is caused, then the eruption becomes inflamed, and even spreads; this may in almost every case be prevented by diminishing the dose. If the system be kept in this state, no injurious operation need be feared. Five minim doses of Fowler's solution may be safely given at first to a person who is moderately strong, has not had his constitution injured by its abuse, and who is not unusually intolerant of it. Cases will, however, present themselves to the practitioner, in which it will be advisable to begin with a smaller dose than this; indeed, if there be any doubt, it is better to give the smaller dose, two, three, or four minims, and pursue it for a longer time; the system is sure, though at a later period, to come under its power. The disease is generally seen to date its improvement from the time of the first affection of the conjunctiva. Again arsenic should be taken with the meals, or on a full stomach; this serves to dilute it, and prevents the gastric irritation which so frequently follows when it is exhibited without this precaution. The decided influence which this remedy has over certain eruptive disorders, is shown, not merely by their amelioration under its proper use, but more manifestly by omitting it for a time, as I have frequently done, and invariably has the

disease recommenced spreading as soon as the system had got rid of the arsenic, as shown by the subsidence of the conjunctivitis, and its course has been again stayed when the medicine has been resumed sufficiently long. The rule which Mr. Hunt has laid down in his very excellent work —viz., "the arsenical course should be protracted (in reduced doses) as many months after the final disappearance of the disease, as it had existed years before." Though perhaps not necessary in every case, it is always advisable, as at this time it is much less difficult to eradicate the tendency to the disease, than, on its reappearance, to travel again over the same ground.

In conclusion, I would observe, that though, as is well known, injurious effects have followed the injudicious administration of arsenic, in no one case have I seen the constitution injured, or the health impaired, when it has been exhibited in the method here advocated; on the contrary, the health has improved, the disease disappeared, and has not returned, when the arsenic was persevered in as long as was deemed necessary.

Lancet, *May* 26, 1849, p. 559.

98.—CASE OF LEPRA TREATED BY ARSENIC. By SAMUEL GRIFFITH, Esq., Late House Physician to King's College Hospital.

[The patient was a stout boy twelve years old, who had first perceived the eruption (mixed psoriasis and lepra) about two months before applying for relief. The following is the account of the treatment:]

Dec. 28th, 1846.—There being nothing to contraindicate its use, Fowler's solution of arsenic was given, in doses of five minims, with his meals, three times a day.

Jan 6th, 1847.—The psoriasis continues about the same, but the body is nearly covered with a papular eruption, (lichen simplex.) The itching is troublesome, especially in the night, preventing sleep. The conjunctiva is affected. Continue the arsenic.

16th.—The lichen has died away, leaving the skin coated with fine scurf. The lepra is fading, no fresh patches have appeared; the sub-maxillary glands are swollen and tender, and he complains of weakness of the eyes. The conjunctiva being more injected than is consistent with the proper action of the medicine, the dose was reduced to four minims.

30th.—The eruption is fast fading; the swelling of the glands has subsided, but the conjunctiva remains affected. The general health continues very good. Skin free from the lichenous scurf.

Feb. 15.—The lepra is quite gone, but has left the usual brown stains. The arsenic was continued to the end of March, when the skin had resumed its natural appearance. There had been no return of the eruption when I saw the patient four months subsequently.

Lancet, *May* 26, 1849, p. 559.

99.—TREATMENT OF LEPRA AND PSORIASIS. By M. EMERY.

M. Emery states, that when appointed to the St. Louis, several years ago, he tried all the various remedies so warmly recommended by authors, and of all these *arsenic* proved the best internal medicine; but besides the inconveniences which it sometimes gave rise to, its operation was very slow. The external use of *strong tar ointment* (⅓ to ¼ of tar) produces, in fact, a far more rapid cure than any other means. Of from 1500 to 1800 patients who have employed it, five-sixths have been rapidly cured, and that without any ill consequence, or any greater frequency of relapse than after internal means. In 228 cases of psoriasis, the arsenic and tar were used conjointly, and 200 were cured within two months. Of all the preparations of *mercury* the *protiodide* is alone efficacious (⅛); but it excites

much irritation of the skin, and if applied to large surfaces, produces salivation. The *iodide of sulphur* is useful in psoriasis of the head; but if applied to large surfaces, produces erysipelas. The conjoined use of the arsenic and tar-ointment constitutes, in fact, the best medication. In a disease so apt to recur, the greatest attention to diet is essential; and on the least symptom of recurrence, resort should be had to medicine, without waiting until it has become very bad. Before commencing, the patient takes a bath, and rubs in the ointment with gentle friction three times a day. In two or three days the strength of the ointment and activity of the friction are increased; and when the disease is of old standing, linen rags smeared with the ointment are to be kept applied. A tepid bath is taken once or twice a week. It is only in very irritable skins that the treatment is interrupted by the appearance of impetiginous pustules or furunculi. In about ten days we perceive, where the squamæ have fallen, a whitish circle circumscribing the patches, and extending from the circumference towards the centre. This is a sign of a decrease of the disease, which usually disappears in two or three months. With respect to the arsenic, we should begin with five drops of Fowler's solution, in four ounces of sugared water, which are to be divided into two doses. Every other day the dose is to be increased a drop, until twelve are reached. If we observe that the patches are becoming thinner, and acquiring a blackish-gray colour, this is a sign of saturation, and the dose is not to be increased; but even when this is not present, it is rarely proper to go beyond twelve or fifteen drops. Sometimes the skin becomes hot and painful around the patches; but this is relieved by tepid lotions, demulcent drinks, and diminution of the dose. After twelve or fifteen drops are reached, a feeling of constriction of the throat, or severe pain of the stomach, is perceived; and then the medicine should be suspended for a day or two, and recommenced *de novo* with the small dose. Pain near the heart, with palpitation, sometimes renders venesection requisite. If any contraction of the extensors of the limbs is observed, the medicine must be at once abandoned; and as soon as the blackish-gray colour of the patches appears, which announces saturation and an approaching cure (though such spots may remain for months), the arsenic must be discontinued.—*Bulletin de Thérapeutique*, tom. xxxvi, pp. 481-90. *British and Foreign Medico-Chirurgical Review, Oct.*, 1849, *p.* 554.

100.—A MEANS OF RENDERING CERTAIN SUBSTANCES INCOMBUSTIBLE. By Dr. R. A. Smith, Manchester.

[In seeking for a substance capable of preserving combustible articles from the action of fire, it appeared to Dr. Smith that:]

Sulphuric acid seemed to present the most promising characteristics of a substance incapable of burning, and of acting so strongly on vegetable substances as to make them incapable of burning. Sulphuric acid itself is a body perfectly burned, or we may say over-burnt, having an atom of oxygen given to it by artificial means, so to speak, which atom is difficult to separate, and therefore not resembling the oxygen of many highly oxydised bodies. It requires a high degree of heat to raise it to vapour; and the vapour formed is sluggish and heavy, remaining long where formed, and quenching flame wherever it is. It destroys the texture of wood also and other vegetable substances, causing them to give out after a time gases which do not burn, mixed with some which do burn; but if there be enough of acid, forming a mixture which does not burn. The wood also cannot be again induced to become combustible until it be heated to redness, so as to remove all the sulphuric acid, leaving only charcoal.

If sulphuric acid could be introduced into the wood just at the time that the fire was going to take place, the fire would cease to take place; and this we can do easily by saturating the wood with sulphate of ammonia. When there is no fire present, there is no sulphuric acid present, as such;

but as soon as the heat rises, ammonia goes off, and sulphuric acid is instantly presented to the wood. The ammonia does not come off quite pure, it is mixed with nitrogen and sulphurous acid; and this disengagement of gases is of advantage in extinguishing fire; when the heat rises to 536° the sulphuric acid is then left to act on the wood in part and to volatilize in part, and that which I have mentioned takes place. The outside of course would first undergo the change, and the inside would be protected by the incombustible outer part; if the fire continued to act long, the inner layer would undergo a similar change. I imagine, then, that the acid acts in a double manner; it makes the wood refuse to burn, and puts out fire. As sulphurous acid is given off in this process, the action is also similar in one point of view to that of sulphur, which has long been used for fire in chimneys.

I have no doubt that a house built of wood prepared in this manner might have a fire lighted on the wooden floor without danger, burning only on the spot to which the fire was limited. A ship also would be safe, even if the cinders did fall from the grate in stormy weather.

I know that muriate of ammonia has been used, and that it acts very well; but I think the sulphuric acid is superior, the ammonia being only to keep it innocent; any other volatile base might do. I am sorry however, that this is not perfect; its solubility in water is a great disadvantage, as it cannot be applied to clothes to be frequently washed. True, it is so cheap that it might be applied every washing where there are peculiar dangers; but if a person were standing very near the fire, the ammonia would in part be evaporated, and the acid remaining would be enough to injure the fabric. There are, however, cases, such as curtains, to which this could not apply, and where it would be valuable.

Sir William Burnet's liquid is chloride of zinc; he uses it for preserving wood and canvass, and also for preventing fire. I am certainly surprised that more use has not been made of it, being, as far as I have seen it, so efficient. I believe the manner in which the chloride of zinc acts is very similar to that of sulphuric acid, destroying the organic matter on the approach of heat, and rendering it incombustible. It can be introduced into wood at a specific gravity of 2000, I believe; sulphate of ammonia cannot easily be used above 1200. By heating the solution more may be attained. Sulphate of ammonia is cheap and easily procured and used, not hurting any thing with which it may come in contact, and therefore more easily managed in households.

The chloride of zinc is said to unite with the fibre. This cannot be said for the sulphate of ammonia. It would not, however, come from the centre of a beam of wood, even if immersed in water, as the water enters with great difficulty into wood; and the solution itself cannot be introduced without forming a vaccum in the saturating vessel, and so removing all the air from the wood. The first time I used this solution I found a large quantity of mould formed, and indeed it contains all the elements to increase its growth. The second time the solution was boiled in an iron vessel, and no mould formed on it; on the contrary mould was destroyed by it. The sulphate of ammonia dissolves iron rapidly, and forms a double salt which is deleterious to such growths. I imagined any other metallic salt would do, and used ordinary chloride of manganese prepared in the laboratory, which killed all such fungi rapidly, and no more have grown after standing eleven months in contact with organic matter.

I believe there are many ways in which this may be used. My wish was to find a substance suited for building fire-proof ships, and I believe this would do; at any rate the ships would be fire-proof, experience could alone tell if any other objection followed. It does not render the wood hard, heavy, or brittle. I believe it would be of the greatest advantage in mills, which now suffer so much from fire, diminishing or rather entirely removing the expense of insurance. It does not hurt colours; so that even

coloured goods might be dipped when kept long in one place, or when sent in vessels abroad. Possibly some delicate colours may be attacked, but this must be a rare case. I am more desirous of seeing ships built of an incombustible material, the means of escape at sea being few and confined to few; and whilst there is any hope of doing it easily, I scarcely think it proper for any one to neglect what information may exist on the subject.

Provincial Medical and Surgical Journal, June 27, 1849, p. 351.

[At the Worcester meeting of the Provincial Association, Mr. CROMPTON, of Manchester, exhibited the action of the sulphate of ammonia in preserving paper. &c, from the action of fire.]

He exposed a piece of newspaper, which had been soaked in sulphate of ammonia to the flame of a candle—though the texture of the newspaper was destroyed, it did not take fire. The heat caused the ammonia to fly off, and the sulphuric acid being set free, charred the paper. As the sulphate of ammonia did not the slightest injury to the texture of the fabric, it was most desirable as a non-combustible application for children's dresses, bed curtains, &c. *Prov. Med. and Sur. Jour. Aug. 8, 1849, p. 431.*

101.—TREATMENT OF CHILBLAINS.—By M. OSMEUR.

In the earliest stage, friction, either employed dry or with brandy or sp. camphor, is the simplest and best means; but when the parts have become red, swollen, shining, and even covered with phlyctenæ, but prior to ulceration, the formula recommended by M. Goffin may be used with the greatest advantage: Camphor, 4 parts; ess. oil turpentine, 30 parts. When the practitioner is only consulted after ulceration has for some time taken place, M. Devergies's ointment is then the best application: Lard, 1 oz.; liq. plumb. subac., 12 drops; thebaic extract, 3 grains; creosote, 10 drops. *Bulletin de Therapeutique.* *Brit. and For. Med. Chir. Rev., Oct. 1849, p. 555.*

102.—TREATMENT OF ULCERS BY MEANS OF OPIUM.—By F. C. SKEY, Esq., Surgeon to St. Bartholomew's Hospital.

In the summer of last year Mr. P., a gentleman residing in Montagu-square, a governor of St. Bartholomew's Hospital, placed himself under my charge, with a large chronic ulcer on the calf of the right leg. Its margin was irregular and jagged, and was elevated to at least one-third of an inch above the base of the ulcer, which base was pale and bloodless. This wound was about the size of a man's extended hand, including the fingers, or even larger. It had existed for, I think, seventeen years. All remedies had failed, and the cure had long been abandoned as hopeless. I gave Mr. P. half a grain of opium night and morning. In three days he himself noticed the singular red colour of the entire margin of the ulcer, which in a week extended over the base. I rolled and strapped the limb; the entire sore consequent on its depressed surface being placed beyond the influence of the pressure. Within two months that sore was reduced *to the size of half-a-crown*, and the *only remedy employed was half a grain of opium night and morning*, which, by-the-bye, had a very beneficial influence on his health. *Med. Times. July 21, 1846, p. 61.*

103.—USE OF COLLODION IN BED-SORES.

Air-cushions and water-beds are not obtainable by the poor, and it has been the practice to protect parts subjected to injurious pressure either by powdering them with some inert substance, or covering them with diachylon. The first of these measures is of little use, and the other does more

harm than good, as by softening the tissues to which it is applied, it only renders them more susceptible to the influence of pressure, especially if the leather on which it is spread gets into folds. Collodion adheres far more closely than dischylon, and is quite exempt from moisture; and in the cases in which it has been tried in the French hospitals, has answered well.

British and Foreign Medico-Chirurgical Review, July 1849, *p.* 209.

104.—TUMOURS.—By Brandby B. Cooper, Esq., F. R. S.

[Mr. Cooper would classify tumours according to the tissues from whence they arise, rather than according to their own physical conditions, since, he says, the effused mass resembles more or less the structures in which it originates, but existing under an altered and abnormal form. He observes:]

Mr. Abernethy has attempted a classific ation of tumours according to their internal structure and organization, placing them under the general heads of sarcoma and cancer, dividing the former into adipose, pancreaic, mammary, and tuburcolated, and the latter into scirrhus and fungus hæmatodes, or, as he sometimes termed it, medullary sar-coma. It appears to me, however, that it would be more rational to classify tumours according to the structures whence they take their rise; and, indeed, this arrangement has already been adopted by Dr. Warren, of Boston, in his comprehensive work on this subject.

[After a few observations on warts,—tumours of the cuticle,—Mr. Cooper proceeds to speak of]

Encysted tumours.—Sebaceous follicles constitute a considerable proportion of the structure of the cutis, their function being to secrete a fluid for the lubrication of the surface of the skin; they may be considered, in fact, as the most simple kind of gland, and are composed of a small sac projecting internally into the cellular tissue, and deriving its blood-vessels from the capillaries of that structure. If from any cause the orifice of the follicle becomes closed, a retention of its secretion must necessarily follow, and this exciting a morbid action, alters the character of the secretion, and is converted into an encysted tumour. These tumours sometimes increase to a considerable size, but more frequently remain about the size of a pea, not appearing to possess any tendency to enlargemennt, unless subjected to irritation, when they often begin rapidly to increase, and require to be removed by operation.

The formation of an encysted tumour may proceed not only from the accidental closing up of the excretory orifice of a follicle, but also in consequence of inflammatory action which may induce a change in the character of the secretion, thickening it, and rendering it incapable of flowing from the follicle in the normal manner. Acne punctata may be considered as the simplest form of follicular encysted tumour.

In many persons there appears to be a peculiar tendency to the formation of encysted tumours, especially in the scalp.

Tumours in the cellular membrane.—Steatomata or fatty tumours are the most frequent morbid growths that occur in this tissue, and which sometimes acquire so large a size, as to lead to the necessity for their extirpation. Some persons seem particularly prone to the formation of these tumours: this would lead to the belief that they depend upon some constitutional tendency rather than upon any accidental local cause, as I have never been able to trace the formation of a steatoma to external injury. The formation of fat, moreover, always seems to arise from a kind of degeneration of tissue, and on that account must be regarded as depending as much upon an altered condition of the constitution as upon mere local action. These adipose tumours are very slow in their growth, causing little or no pain, even when they have acquired a very considerable size. Their physical condition is recognizable by their doughy feel, lobulated form,

great mobility, close proximity to the skin, and from the skin itself retaining its normal appearance. If the tumour be pressed so as to tighten the skin, its lobulated form becomes quite distinct, and the freedom from pain during this manipulation constitutes a further diagnostic mark. In some patients several of these fatty tumours are found existing in different parts of the body at the same time; and I had lately a female patient in the hospital who had eight, three of which weighed at least three pounds each: one of them I removed from the upper arm in consequence of the inconvenience it caused her.

Steatomata consists of masses of fat enclosed in adipose membrane, and generally when they acquire any size they produce a thickening of the surrounding cellular tissue, which forms a cyst of greater or less density around the whole swelling; the lobulated form probably results from the distension of the cells of the adipose membrane, which are sometimes so distinctly separated as to give to the tumour when removed somewhat the appearance of a bunch of grapes. If the fat be soft in consistence, it is more diffused, and its lobulated appearance much less distinct; and I have met with steatomata, the contents of which were so soft as to give almost the sensation of fluctuation, and are liable to be mistaken for abscess. When the fat is deposited immediately beneath the skin and subjected to much pressure, the lobes are much smaller, and even sometimes granular, and the cysts proportionally thicker and stronger: such steatomata are more firmly fixed, and consequently removed with more difficulty when their extirpation is had recourse to. Sometimes steatomata assume a pendulous form, adhering by a narrow neck as if a few of the adipose cells only were subject to the abnormal growth of fat, the tumour extending itself outwards, as if the enclosing cyst were capable of generating fat in the direction of its length rather than its breadth, forming a long pendulous tumour with a narrow neck. In removing these tumours care must be taken not only to take away the external swelling, but also to extract the qaantity of fat situated subcutaneously. It is not unfrequent in these cases to find rather a large branch of an artery running through the neck of the tumour into the cyst, by which the fat, in fact, becomes generated beyond the normal influence of the capillaries of the original adipose membrane. In the removal of the steatomata of this form, more than usual hemorrhage may therefore be expected from the manner in which the cyst is nourished.

In the operation for the extirpation of steatomata a free incision should be made through the skin to expose the outer capsule of the tumour: this capsule is next to be cut through, when generally the mass of fat may be turned out of its cyst as readily as a kidney may be drawn from its capsule. It rarely happens that any difficulty occurs in checking the bleeding, but the wound should never be dressed until the hemorrhage has perfectly ceased: or the cavity becomes filled with blood, and the union of the wound by adhesion will certainly be prevented. When dressed, the edges of the wound should be closely adapted and retained in their position by one or two sutures: a compress of lint should then be laid on the cavity, and slight pressure maihtained by bandages. It is not always, as I have already mentioned, that these tumours are so readily extirpated, for if by exposure to pressure or external violence they have been subjected to inflammation, they may adhere so firmly to their capsule as to require the dissection of the latter from the surrounding cellular connections: in this case the period required in the operation must be much protracted. I have never known the disease return after its extirpation, nor have I ever witnessed what is described by some surgeons—viz. that the stimulus of the operation leads to the formation of these tumours in other parts of the body, even where there had been no previous apparent tendency to their formation. Indeed, I eo not know of any surgical operation which promises a more favourable result, and have never known any untoward symptom occur excepting when the size of the tumour renders so large an incision necessary

that a comparative degree of constitutional irritation must naturally result. Erysipelas, however, sometimes supervenes, even in these minor operations.

Tumours in the muscular system are of very rare occurrence, and indeed the muscular system seems particularly free from disease of any kind, for even the abnormal contractions of cramp or tetanus, and the involuntary motion of the muscles in chorea, must rather be considered as the result of disease of the spinal nerves than of the muscular system itself. It is true that malignant disease, whether it commences in bone, periosteum, or cellular membrane, may secondarily affect the muscular system, but primary malignant affection of this tissue I have never seen.

The only abnormal growth I have witnessed in the muscles is one of a fatty character, and which, as it is invariably indicative of constitutional deterioration, requires rather medicinal than surgical treatment, and it has never fallen to my lot to remove any morbid growth from a muscle; my surgery not having extended further than the division of muscular tendon for the relief of some permanent contraction of a joint.

Med. Gaz. Aug. 31, 1849, *p.* 353.

105.—A SUBSTITUTE FOR TENTS IN DRESSING ABSCESSES.—By M. Nonat.

In place of introducing tents, which are not only painful, but give rise to other inconveniences, M. Nonat passes a crayon of nitrate of silver into the opening, to the depth of from ½ to 1 centrimetre, withdrawing it immediately. The pain caused by this is trifling and evanescent, and the eschar produced prevents the union of the walls of the trunk of the abscess. It is in abscess of the breast that this procedure has been found especially useful; the deepest abscesses being thus brought to heal in seven or eight days. The cauterization has to be repeated every two or three days.—*Gazette des Hopitaux*, No. 23.

Brit. and For. Medico-Chirur. Review, July, 1849, *p.* 292.

106.—USE OF IODINE IN A SNAKE-BITE.

Dr. Whitmire, in the communication from which this is condensed, states that he has used the tincture of iodine in bites of the rattle-snake, viper, and copper-head, on both man and beast, with complete success. His manner of using it is to paint the part that is bitten, and so far as the swelling extends, with three or four coats of tinct. (pharmaceutical strength) twice daily; and should the swelling extend which it almost always does after the first application, if made any time soon after the infliction of the wound, it should be followed up with the paint. By the time the third application is made, the tumefaction will cease to extend, and three or four more applications will generally restore the limb, or part affected, to its natural state, save perhaps an obtuse sensibility to touch, owing probably to the cuticle being destroyed, and some soreness of the muscles, which will remain a longer or shorter period. A successful case is related in illustration of the efficacy of this mode of treatment.—*North Western Med. Jour. (Amer.)*

Dublin Medical Press, June 20, 1849, *p.* 393.

107.—ASSACOU, A NEW REMEDY FOR ELEPHANTIASIS.

[*Assacou* is the native name of a tree (Hura Brasiliensis, *N. O. Euphorbiaceæ*) indigenous to the Brazils. An account of the employment of the juice of this tree in elephantiasis (lepra tuberculosa) has been transmitted to the French Government from one of the French consuls in Brazil. We are told :]

Martius, in his "Systema materiæ medicæ vegetabilis Brasiliensis," regards it as an anthelmintic. The beneficial effect of this remedy was strikingly manifested in a case at Santa Maria de Belem. A man, suffering under lepra, had three years previously fled from the central provinces, in order to avoid the usual confinement adopted towards lepers. He was still afflicted with the disease, and on the assacou juice being proposed to him as a remedy, knowing its poisonous character, he gladly availed himself thereof, rather with the hope of putting an end to his existence than of being cured of leprosy. The effects, were, however, so favourable that he not only no longer hesitated to return to his native village, but was eager to do so in order that he might impart the secret to others. The case was investigated by a medical commission, and experiments were made upon four other cases with considerable success; although it must be borne in mind that these apparent cures require the confirmation of time, as this disease is peculiarly prone to return, and a subsequent fatal termination is by no means unfrequent.

The mode of exhibition is by pills made of the extract; of the juice in doses of a few drops; and in baths made by boiling the bark. The decoction is made by half an ounce of bark to a pound of water, adding twelve drops of the juice of the tree. The bark of the tree contains the most active principles. The decoction applied to the skin produces an eryspelatous inflammation, and a pustular eruption. The natives employ the juice as a poison, and to this, no antidote is known.

Messrs. Merat and Giber conclude their report to the minister, by stating—1st, That assacou is a potent and poisonous remedy; requiring to be given with great caution; 2d, that the reports of the Brazilian physicians regarding its efficacy in lepra, require confirmation since they themselves admit that their observations have not been sufficiently numerous; 3d, that if confirmed, the importation of the remedy is desirable.—*Journal de Pharmacie et de Chimie. Med. Gaz., Aug.* 10, 1849, *p*, 264.

AFFECTIONS OF THE EYE AND EAR.

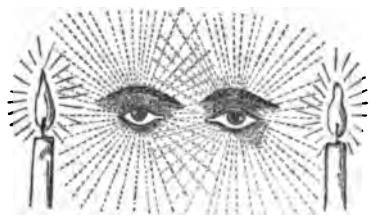
108.—NEW MEANS OF ASCERTAINING THE EXISTENCE OF DISEASE OF THE EYES.—By J. D. Macdonald, Esq., Surgeon, R.N.

It is a fact but little observed, that when a stratum of dust is laid upon the surface of a mirror, each particle and its reflection so lie, one with respect to the other, that a line drawn through them both will be, in every case, as the radius of a circle, whose centre is in the pupil of one of the observer's eyes as seen in the glass; so that an appearance of rays is thus produced, seeming to emanate from that point. The matter in itself is trivial, but, from what follows, it will be found to afford a delicate test for discovering the relative strength or visual capacity of one eye, compared with the other, hitherto a desideratum in opthalmic surgery.

If the right eye be illuminated by a candle while the left remains in shadow, the experimenter will perceive, by looking into a mirror, prepared as above, that the irradiation proceeds from the pupil of the shaded eye; and this without reference to its position.

Placing the light on the opposite side, (the left), the physical circumstances are altered, and the appearance is just the reverse of the former case.

But, should two candles be employed, one on either side of the observer's head, the lines formed by the dust particles, and their reflections, will either seem to irradiate from both eyes, as centres, or to spread from each side mutually across the opposite eye.



In explanation of these facts the writer finds, that when any circumstance incapacitates either eye from discharging its functions perfectly, (as the light in the first and second experiments cited) the unaffected organ appears to have dominion, and this is manifested by the radiation of the particles seeming to take place from its pupil in the mirror, and overpowering those of the other eye. In consequence of the sympathy existing between the optic nerve and iris, when a strong light falls upon the latter, the pupil diminishes in size, so as to regulate the amount of light impinging on the nerve, according to it sensibility. When one eye is thus influenced, its powers are lessened considerably, for, while it is directed to the image in the glass, the iris cannot admit a sufficient amount of light to impinge upon the retina from that quarter, having much stronger stimulus in active operation to contend with from another. This state of things is quite reversed in a shaded eye, because the iris is free from the action of a powerful light, and has only to discharge its office in allowing the ingress of as many rays from the dust particles of their reflections as the delicacy of the optic nerve can bear, which fully accounts for the strength of the impression overpowering that of the weakened eye.

When two candles are employed, as in the third experiment, both eyes are equally influenced, receiving a similar distribution of light, and are consequently, alike fitted (*cæterse paribus*) for the performance of their respective functions, so that the lines necessarily appear to irradiate from both eyes. Now, the practical application of the experiments alluded to, (if properly conducted,) is this, that the least inequality of the powers of one eye when contrasted with those of the other, is instantly discovered, and the earliest onset of cataract, amaurosis, &c., is at once detected; for, if both eyes are similarly situated before a light which falls equally upon each, the patient will himself discover where the defect lies, independent of any other proof, agreeably to the explanations above given.

A very close relationship exists between the co-ordination of the muscular movements of the eye-balls and the function of adaptation to distance,

and also an intimate connexion between this latter and the condition of the retina. Thus, if the retina of one eye be in any state of debility, the adaptive changes do not take place equally in both eyes, and, as a necessary result, the co-ordination of the muscular actions which so wonderfully effects the concentaneous movements of the eye-balls is disarranged, and strabismus (or squinting,) is, under such circumstances, satisfactorily accounted for.

If then, in consequence of debility of one of the retina, whether from disease (as is usually the case,) or from whatever cause, there is a tendency to squint, the eye so disposed may be instantly detected by the foregoing experiment, in which it also assumes its wonted position. This test has been successfully tried by the writer in the case of an individual who had been subject to an occasional strabismus, frequently resulting from long concentration of the eyes on one plane, as in reading. There was a loss of co-ordination both in the muscular movement of the globes and the power of adaptation to distance, and, in short, a want of balance in the tone of both organs. On looking into the mirror, as before explained, with an evenly adjusted amount of light on each eye, he observed the rays emerging from the left eye to cross and obliterate those from the right, which indicated to his own feelings and convictions, that the latter was the organ affected.

The advantage of such a test as the present to the opthalmic surgeon must be obvious, when we consider that the sound eye has been frequently operated on in cases of strabismus, in consequence of incompetent diagnosis.

Medical Times, Sept. 1, 1849, *p.* 176.

109.—TREATMENT OF GRANULAR OPHTHALMIA.—By M. Buys.

Some interesting, and at the same time decisive experiments were recently made at the Military Hospital of Bruges, to determine the relative values of nitrate of silver and acetate of lead in the treatment of the above-mentioned disease. They prove the incontestible superiority of the acetate of lead.

This remedy was first introduced into practice by M. Buys, of the Bruges Hospital. His mode of applying it is as follows:—The neutral acetate of lead is reduced to an impalpable powder, and applied to the eyelids by means of a very fine hair-pencil moistened with water, and then dipped in the powder. From one grain to one grain and a half, is sufficient to cover the whole inner surface of one eyelid, over which it is uniformly spread. After two or three applications, the granules disappear, and several examples of a prompt cure are related by Dr. Cunier, in cases which the surgeons had acknowledged to be rebellious to nitrate of silver. The application of the lead is likewise much less painful.

Medical Times, July 28, 1849, *p.* 74.

110.—APPEARANCE OF THE MEMBRANA TYMPANI IN HEALTH AND DISEASE.—By Dr. Kramer, Berlin.

By the most careful ocular inspection of well-nigh 4000 cases of ear-diseases, repeated on some of these many times, I have arrived at the most undoubting conviction that the *healthy* membrana tympani is entirely colourless, shining, and diaphanous, having a well-marked concavity externally; and that under the influence of the inflation of the tympanum, while the mouth and nostrils are closed, it is raised only into two round, longish swellings near the malleus, whence we may conclude that it is in a state of expansion. The *diseased* membrane, on the other hand, I have always found either inflamed, and then reddened, thickened, degenerated, swollen, or indurated; or, the inflammation having ceased, some of the numerous conse-

quent changes of organization have been detectible, these likewise all exclaiming the idea of relaxation. With proofs so carefully obtained, I must demand of the supporters of the doctrine of the diseased tension and relaxation of this membrane to indicate some previous signs of the existence of such conditions, and for the future to abstain from all explanations derived from theoretical possibilities and pretexts. The membrane is visible in its whole extent, and changes in its tension must be detectible by a quick and practised eye; but since none such exist, we must omit them from among the really existing diseased conditions of the ear.

In the former edition of my work I put forth the opinion that the membrana tympani was never *ruptured* without prior inflammation. More precise observation has brought to my notice four cases in which the membrane has been ruptured by a blow on the ear, and therefore from the external compression of the air; and two in which this has followed the employment of the air-press, and consequently the pressure of air from within; but that the malleus should become broken within the tympanum of a living man, and, by the friction of the fragments, rupture the membrane (as stated by Ribes), I as little believe as that it also sometimes becomes ruptured by the pressure of accumulations of indurated cerumen in the meatus. In more than 400 of such accumulations I have never seen anything of the kind. *Brit. and For. Med. Chir. Rev., Oct. 1849, p. 462.*

III.—ON OPACITIES OF THE CORNEA.—By Dr. J. C. Hall.

[Dr. Hall remarks that it is very important to distinguish those opacities of the cornea which will be removed by the unaided efforts of nature, from those which will require the assistance of art. He says:]

Opacities of the cornea, arising as they do from a great variety of causes, admit of division into three classes—1st. Opacities resulting from the original structure having been destroyed by sloughing, or ulceration, followed by a deposit of opaque matter forming a cicatrix. 2nd. Opacities resulting from the application of a powerful escharotic. 3rd. Cases in which opaque matter is deposited upon the texture of the cornea, without any previous loss of structure.

Treatment of Opacities of the Cornea.—Simple nebula of the cornea can be removed without much trouble by the daily application of a solution of nitrate of silver in distilled water—(distilled water, seven drachms; nitrate of silver, one to three grains; wine of opium, without the aromatic, one drachm.) Or what is better still, in more severe cases, by the following drops, which I have now been in the habit of prescribing very frequently during the last ten years, and with much advantage:—Take of the bichloride of mercury, two grains; distilled water, an ounce: mix for a lotion, to be used once or twice a day. I would repeat, that whatever lotion be employed, it is far better not to drop it into the eye as we commonly see, even in hospitals; a camel-hair pencil should be dipped into the solution, and the opaque spot touched with it, by which means the remedy is at once brought into direct contact with the part to which you wish its operation to be confined, and that, too, without decomposition or dilutation from the tears, which must always be the case in the ordinary method.

Whoever has had much experience in diseases of the eye, will have observed that when any of these drops are employed for the purpose of removing opacities of the cornea, after a few weeks they appear to lose their useful effect, the disease becoming, as it were, invincible to them; I would, therefore, suggest that the nitrate of silver ointment, or drops, should be used for a week or ten days; then a weak solution of the bichloride of mercury; then the opium wine, and then the nitrate of silver a second time. This plan keeps up a continued state of improvement, and the disease is removed in a much shorter space of time than if one of them only had been persisted in.

When a patient comes before us with the worst possible form of opacity, leucoma arising, as is too often the case, from extensive ulceration, which has altogether changed the nature of the corneal surface, or with an extensive opacity, resulting from the application of a powerful escharotic, (which, although it may not have destroyed the vitality of the part, appears to have produced some chemical change in its structure,) it is quite labour in vain to attempt the cure of such an affection, and truly dishonest, time after time, to pick the pocket of the unfortunate patient of fees, by exciting hopes which can never be realized—hopes, the blighting of which, in the end, much increases his misery. Still, although this opacity cannot be destroyed by any means at our command, nor removed by the surgeon, this admission often only applies to the central portion of leucoma. In many cases we have the happiness to find the edges becoming gradually less and less opaque; a halo of hope surrounds this dimness of vision, and although it may not be within the compass of our art to improve the more dense central portion, something may yet be effected with the surrounding edges; and I have been consulted in cases where a steady continuance in the application of remedies has most certainly produced very great benefit, and the results recorded in the archives of the profession are doubtless such as to justify their use in many of these unfortunate cases.

According to my experience, the most useful remedy is the nitrate of silver ointment, of a strength proportioned to the condition of the affected eye. Counter-irritation should also be kept up behind the ears or at the nape of the neck by blisters. Many advise certain ointments or liniments for producing irritation on the skin. I have little practical experience of their effects, but a very short trial of them most fully convinced me that they were very inferior to blisters. In the first place, several days must elapse before any useful influence can be exerted; and, in addition to this loss of time, which is often highly important, I am much mistaken if this St. John Long practice of applying plasters of tartarized antimony, &c., above the eyebrows does not often produce permanently mischievous results, and too much care cannot be exercised in daily watching their effects, more particularly when applied to the head and face of young persons, in whom, in some cases, their application has been followed by a state of inflammation and sloughing which has even threatened the loss of life.

During certain stages of many inflammatory actions existing in the eye, setons and issues can be most advantageously employed. They are easily made by the surgeon, cause little pain or trouble, can be enlarged or diminished at pleasure, and being perfectly manageable, combine, within any limits we may be inclined to mark out, the advantage of a moderate degree of counter-irritation with a most salutary discharge. The advantages connected with the use of blisters are many—the convenience of their application—the rapidity of their operation—the quick subsidence of their effects when no longer required. There may, however, be cases in which, from peculiar irritability of the skin, from the liability of the patient to attacks of erysipelas, or from their having, on some former occasion, produced a violent effect on the urinary organs, some other form of counter-irritation must be used rather than blisters.

The following is the form in which I have usually employed the nitrate of silver ointment:—To take nitrate of silver, from three to ten grains; solution of diacetate of lead, twenty drops; lard, one drachm. This ointment must be used every night or every second night. A very small portion (not larger, than a large shot corn) being put into the eye, it always creates more or less ophthalmia, and its application must be regulated accordingly.

During the employment of this ointment, I would in many cases most strongly advise the internal exhibition of the bichloride of mercury. When there is nothing to counter-indicate its use, I have given it for six or eight weeks in the following form, without any severe affection of the gums, irri-

tation of the bowels, or any other symptom requiring that the dose should either be intermitted or reduced. Ordered solution of bichloride of mercury, one drachm; tincture of bark, one drachm; distilled water, seven drachms and a half. To be taken twice a day.

As an alterative, the bichloride or oxymuriate of mercury, though doubtless more frequently prescribed than formerly in these cases, is not, I venture to think, so extensively used as it ought to be. It can be given in solution, which is of considerable advantage, rendering its action much more certain, more equal, and by readier absorption probably more effectual in producing an alterative influence upon the whole system.

Dr. Holland remarks that he has "seen its influence in augmenting the secretions, procuring the absorption of morbid growths, altering the state of the skin in many cutaneous disorders, and changing the character of morbid actions generally throughout the system, in cases where he believes no other medicine or combination of medicines would have had equal effect. Its combination with bark, steel, sarsaparilla, &c., afford resources of the greatest value in the treatment of disease; and, though otherwise held by common opinion, he thinks it, on the whole, as safe a medicine as calomel in the hands of the practitioner, inasmuch as its distribution can be made as equal and determinate, and its effects, from being given in a state of solution, are much less likely to be interrupted by mechanical hindrances in the stomach and bowels."

I would also add, and it is worthy of note, that this medicine (bichloride of mercury) may be continued in uninterrupted use for a very considerable period, without obvious injury or inconvenience, and in certain cerebral and spinal affections, a long unbroken course of this preparation, is of singular avail, but to reap its fullest benefits, we must be watchful, patient, and decided in its use, for in cases in which, in the end, the happiest results follow the administration of the remedy, the changes are often the slowest, and not testified by those instant and obvious results which are sometimes desirable to fortify even the mind of the physician in the perseverance proper to the practice, still more to convince the patient, his family, and friends, that time is necessary for the development of the full and complete advantages of the means employed. Thus it frequently happens that the patient, alarmed, it may be, at the name of the medicine, and by the precautions taken as to its dose and effects, or tired by the little progress he appears to make, refuses to go on with the remedy, very often at the moment when becoming most effective, and when there was every reason for thinking a dangerous or distressing malady would eventually yield by a further employment of it. I have many times seen the beneficial results arising from a long-continued use of small doses of the bichloride of mercury, in solution, in chronic iritis, and also in several cases of paraplegia, the slow progress of the case giving full scope for its effects, and the great danger in prospect, justifying a long trial of the remedy. Of course in strumous children, mercury in any form can seldom be employed with advantage, and in treating opacities of the cornea in them, in addition to appropriate remedies to the eye, it will be necessary to strengthen the system by attention to diet, shower-baths, sponging the body with cold water, the administration of the disulphate of quinine and a residence of some months during the summer, when the circumstances of the parents will permit, at the sea-side.

Lancet, July 28, 1849, p. 95.

112.—ON A REMARKABLE SWELLING OF BOTH UPPER EYE-LIDS.—By WILLIAM BOWMAN, Esq., F.R.S., &c.

[The following case is interesting on account of its novelty.]

Henry John B., æt. 16, a very healthy looking boy, of ruddy complexion, reddish hair, son of a publican at Islington, came to the Opthalmic Hospital,

Moorfields, in February, 1848, for a swelling of both upper eye-lids, which made his friends and himself uneasy by its unsightly appearance, though he had experienced no pain. The swelling was precisely alike on the two sides. It was almost limited to the outer half, or outer two-thirds of the lid, extending from the brow to within a sixteenth of an inch of the tarsal border, where it ceased by a groove, over which the relaxed and distended integument hung, as was very evident when the lid was viewed in profile. The swelling was reddish in the middle part, from fullness of the cutaneous vessels. It was quite soft, as if from œdema of the parts subjacent to the skin; and when pressed by the finger, no resistance was encountered, nor was any indentation left. The skin was thin, and slipped freely over the orbicularis muscle, nor was it easy to seize between the finger and thumb a fold of this muscular layer. When this was done, however, the feeling was that of redundant and loose cellular tissue beneath, and not of any tumour. Eversion of the lid showed the conjunctiva and subjacent tissue to be perfectly natural. Pressure behind the external angular process detected no tumour. The globe was in all respects healthy. Careful inquiry as to his general functions, only served to show that he was in excellent health.

He stated that this swelling had come on gradually, on both sides together, during the preceding three months, without pain or tenderness, and that he was first made aware of it by the remarks of his friends. On one morning it had been so much worse that he could not open the lids on waking; but this had subsided during the same day, and now, for some weeks, the affection had been such as I then saw it. It appeared to be a symmetrical partial œdema of the lids, of which the cause was concealed.

Not understanding the case, I first directed some purgatives, with alterative treatment, and an evaporating lotion to the lids, and subsequently gave him diuretics; but the conditions remaining the same, I ran some slender threads through the swelling on one side only, as an experiment, and left them in for a week, hoping there might follow some condensation of the tissues in their tracks; but when they were withdrawn, the swelling remained the same, but the integuments were rather redder. He now for three months, under the advice of my colleague, Dr. Farre, resumed the alterative remedies, with a strictly regulated diet, but without any good result. During my absence from town in September, my friend, who was seeing my patients, gave him iodine of potassium, and applied the tincture of iodine to the swollen lids; and the former I continued on my return, but left off the tincture, as it appeared to increase the tumefaction, by drawing more blood to the skin.

In November he was just as in the preceding February. There was the same redness and bulging of the skin, and the same feel of the parts; neither tenderness nor itching. His health was good. I noticed that his temporeal fossæ were unusually large, but, as it afterwards proved, this had no bearing on the case. I had also a drawing made; but a wood-cut would not convey the appearance, as the redness of the integument was even more conspicuous than its swelling.

The attempts hitherto made, failing to remove the swelling, they were altogether laid aside, and I waited till the spring, to see whether by that time any spontaneous improvement might nor take place. At the end of April, the young man again presented himself, and being exactly in the same state as before, he was anxious that I should perform whatever operation offered a chance of improving his appearance. I accordingly determined to employ a modification of the operation for entropion, and to remove, not merely a horizontal ellipse of integument from the most projecting part of the swelling, but also a corresponding portion of the orbicularis muscle, and of the fascia below it, and so to endeavour to consolidate the integuments with the parts beneath, which seemed the principal seat of the disease.

On the fourth of May I operated on the left side. A piece of the integu-

ment was taken up with the entropion forceps, and removed with scissors to the extent of two-thirds of the horizontal width of the lid, and one-third its vertical depth. The orbicularis thus exposed was healthy, and was removed to nearly the same extent, by means of common forceps and scissors; a dense cellular fascia then bulged forward in the gap. This fascia being removed in its turn, a mass of fat, resembling the natural fat of the orbit, and about as large as an almond, fell forward in the opening, and I immediately removed it. It was not tightly embraced by any capsule of the areolar tissue which surrounded it, but was divided into pellets, or small lobes, which moved freely on one another. It therefore had not the appearance of a fatty tumour. After its abstraction, there was no other tissue projecting, and I therefore closed the wound by sutures, and had the satisfaction of seeing it heal in four days, with an almost complete relief of the deformity.

A fortnight after, at his own request, I performed precisely the same operation on the right side, and with the same result. On cutting into the sub-muscular fascia, a pellet of fat appeared, and was cut away; a lobe of what seemed to be lachrymal gland was then exposed to view, but showing no disposition to project, it was not interfered with. When the wound healed, the deformity was even more completely removed than on the other side, more care having been taken with the shape of the piece of integument excised. Two months afterwards, the lids hardly bore any trace of what had occurred.

Remarks.—Probably most surgeons of large experience in eye diseases, have occasionally met with a case like the preceding, in which a swelling resembling œdema, and of which the most obvious character was a distended and somewhat pendulous and reddened condition of the skin of the upper lid, occurred simultaneously on both sides, in a young person otherwise in perfect health. I have myself seen but two others besides this one, and in neither of these was the swelling known to depend on the protrusion of fat, although I have little doubt that such was actually the fact. In both, the upper lid on each side was similarly affected, and both were young subjects.

The true fatty tumour of the orbital cellular membrane is comparatively rare, and it occurs singly, generally at the upper or outer side of the globe, in the loose areolar tissue outside the recti muscles. When sufficiently large to cause a prominence of the skin, it admits of being felt as a tumour, although readily retiring into the orbit under pressure; and on everting the lid it usually projects under the conjunctiva, where that membrane is reflected from the lid to the globe, near the outer canthus.

London Jour. of Med. Nov., 1849, p. 969.

112.—USE OF GLYCERINE IN DEAFNESS.—By T. H. Wakley, Esq., Surgeon to the Royal Free Hospital.

[Mr. Wakley states, that after employing the cotton-wool as recommended by Mr. Yearsley (see Retrospect, vol. xviii, p. 238), in a great number of cases of deafness, and finding that the relief was frequently only temporary, he was led to the conclusion that the good effects were due to the water with which the cotton was moistened. He was therefore induced to employ glycerine, as being a substance which would retain its moisture. Mr. W. states that he has used it in several hundred cases, in many of which the power of hearing has been completely restored. He says:]

It was only after much experience in the application of the glycerine, and from observing its action in a great number of cases, that it could be ascertained what were those conditions of the ear in which it was most likely to prove of advantage. Contrary to what might have been anticipated, the use of the remedy was successful in persons in whom the deafness had been of many years' duration—one, for example, thirty years, and

also in cases where the existence of the malady could be traced to the eruptive fevers of childhood. In instances of deafness caused by inflammation, followed first by suppuration, and then by a horny, dry condition of the auditory canal, the application of glycerine has been attended with signal advantage. Equally marked and peculiar is the success when it is used in cases where there is a partial or total absence of ceruminous secretion In many instances of deafness belonging to these classes of cases, the employment of glycerine has been followed by a perfect restoration of the power of hearing. In other examples of deafness, where the membrana tympani had evidently become thickened and hardened, and on examination with the speculum, denoted a whitish or pearly appearance, the use of the glycerine was followed by strikingly beneficial and gratifying effects. It is evident, therefore, that the application of glycerine is equally admissible, whether the tympanum be in a sound state, or whether it has been destroyed by ulceration. *Lancet, June* 16, 1849, *p.* 631.

[Mr. Wakley makes the following additional remarks on the mode of using the glycerine. He begins by referring to a former remark, that :]

"The ears were carefully cleaned by means of cotton held between the blades of a pair of forceps, and dipped frequently in warm water. The canals were then rubbed with dry cotton, held in a like manner. Then the glycerine was applied by the same means, the cotton, well soaked in it, having been repeatedly passed backwards and forwards in each external meatus, care having been taken to apply it to the tympanum." It was mentioned, in some of the other reports, that the glycerine had been applied by means of a camel-hair brush. In addition to the two methods now noticed, I ought to have stated, that an instrument has been used by me, which somewhat resembles the caustic-holder employed in diseases of the uterus. The length of the instrument is six inches. The shaft about its middle is divided into three parts, which, at their extremities, form as many claws. These claws can be made to grasp the cotton firmly, by means of a sliding ring. The cotton, on being placed between the claws, should be so fixed that in moving the instrument to and fro in the meatus externus, the free passage of air should be provided for, otherwise an imperforate tympanum might be ruptured. The two best modes to be adopted for accomplishing this object are—1st, by not placing too large a quantity of cotton within the claws; and 2ndly, by so fixing the cotton, as to allow portions of it slightly to project in fringed ends, in the three divisions formed by the claws. The extreme points of the claws should *dip* or *turn* towards the shaft. The tympanum will not then be scratched by them should the cotton, from having been carelessly fixed, accidentally escape.

A further experience of the effects of glycerine, since the case reported in March was written, has induced me to believe that I have claimed much less credit for that agent than its merits deserve. In several cases of deafness of very long standing, and in which the aural passage and tympanum exhibited a white polished appearance, and the external meatus had become inelastic, hard, and horny, and entirely deprived of its natural functions, the *glycerine*, patiently applied, daily, has proved of the utmost advantage, by restoring the parts to their natural condition, and by reproducing the ceruminous secretion of the organs. *Lancet, June* 23, 1849, *p.* 664.

[Mr. T. Buchanan, of Hull, claims the merit of having introduced the use of glycerine in diseases of the ears.] *Med. Times, June* 30, 1849, *p.* 684.

MIDWIFERY,

AND

THE DISEASES OF WOMEN.

114.—POSITION OF THE FŒTUS IN UTERO, AND THE CAUSES OF PRETERNATURAL PRESENTATIONS.—By Dr. J. Y. Simpson, Edinburgh.

[Dr. Simpson endeavours to establish the following propositions relative to the common or natural position of the fœtus in utero:]

1. The usual position of the fœtus, with the head lowest, and presenting over the os uteri, is not assumed till about the sixth month of intra-uterine life, and becomes more frequent and more certain from that time onwards to the full term of utero-gestation.

2. Both the assumption and maintenance of this position, are vital and not physical acts, for they are found to be dependent on the existence and continuance of vitality in the child; concurring with its life, but being lost by its death.

3. In human physiology we do not know or recognize any vital power or action, except muscular action, capable of producing motions calculated to alter or regulate the position, either of the body, or any of its parts; and further, the motory muscular actions of the fœtus are not spontaneous or voluntary, but reflex or excito-motory in their nature, causation, and effects.

4. The position of the fœtus, with the head placed over the os uteri, is that position in which the physical shape of the normal and fully developed fœtus is best adapted to the physical shape of the normal and fully developed cavity of the uterus.

5. This adaptive position of the contained body to the containing cavity is the aggregate result of reflex or excito-motory movements on the part of the fœtus, by which it keeps its cutaneous surface withdrawn as far as possible from the causes of irritation that may act upon it as excitants, or that happen to restrain its freedom of position or motion.

[Proceeding to speak of preternatural positions and presentations of the fœtus, as originating in the derangement of one or other of these normal conditions, Dr. Simpson states them to be referrible to the following causes:]

First. Prematurity of the labour; parturition occurring before the natural position of the fœtus is established.

Secondly. Death of the child in utero; or in other words, the loss of the adaptive vital reflex actions of the fœtus.

Thirdly. Causes altering the normal shape of the fœtus or contained body, or causes altering the normal shape of the uterus or containing body, and thus forcing the fœtus to assume, in its reflex movements, an unusual position in order to adapt itself to the unusual circumstances in which it happens to be placed.

And lastly. Preternatural presentations are occasionally the result of causes physically displacing either the whole fœtus or its presenting part, during the latter periods of utero-gestation, or at the commencement of labour.

[*Prematurity of the labour* is a cause of mal-presentation in this restricted sense, that the position of the fœtus with the head lowest, and presenting over the os uteri, is not generally assumed till the sixth month; and that from this period such position is taken and kept with a certainty and fre-

quency which increase in proportion to the duration of the pregnancy. Thus, Dr. Simpson states, that while the per-centage of head presentations in children born at the end of the sixth month is only about 52 in 100, it increases during the seventh month to 68 in 100, and to 76 in 100 during the eighth and ninth months; and rises at the full period, as high as 96 or 97 in 100. He says:]

It is hence evident that if, from any causes, parturition happens to come on prematurely, the child is much more liable to present preternaturally, than if pregnancy had gone on to the full time; or, in other words, the prematurity of the labour, is, in this sense, a cause of the malpresentation of the fœtus.

[From an examination of statistics published by various authors, Dr. Simpson adduces also the following conclusions:]

1. That while presentations of the head occur in 96 per-cent. in common obsteric practice at the full time, the same presentations occur only in 70 per cent. among premature labours; 2. That pelvic presentations are nearly eight times more frequent among premature labours than among labours at the full time; and 3. That transverse presentations are nearly ten times more frequent among premature labours than among labours at the end of the usual time of pregnancy.

[On the subject of the *death of a child*, as a cause of abnormal presentation, Dr. Simpson says:]

The child not unfrequently dies in utero, and before labour begins. In cases in which the death of the fœtus is induced from any cause, during its intra-uterine life, the child, when labour at last supervenes, is apt to be found presenting preternaturally. The maintenance as well as the assumption of the usual position of the fœtus with the head downwards and over the os uteri, is an excito-motory, and consequently a vital act; and hence, when the vitality of the fœtus is lost, its position, as a result of that vitality, is liable to be lost also. In other words, the death of the child thus becomes a cause of its malpresentation at the time of birth.

The difference between the liability to cephalic, pelvic, and transverse presentations between children who have died before labour, and those born alive, may be expressed as follows:—1. Head presentations are 16 per cent. less frequent among dead than among living infants; 2. Pelvic presentations are five times more frequent among dead than among living children; and 3. Transverse presentations are four times more frequent among the former than the latter. *Monthly Journal, July*, 1849, *p.* 866.

115.—RATIONALE OF PARTURITION.—By Dr. Marshall Hall

[Dr. Hall recommends an experimental investigation into the rationale of parturition. He says:]

For my own part, I *compare* parturition with the act of deglutition, and with the act of vomiting, and especially I regard it as combining,

1. *Reflex action*; 2. *Peristaltic action*; 3. *Voluntary, and* 4. *Emotional influence*, with 5. *Sphincteric relaxation.*

The question is—how far the first two sources of action can be severed, and measured, as it were, in experiment.

For this latter purpose, an instrument, to be designated a dynamometer, and consisting of a long tube attached to a small sphere of India rubber, and partly filled with mercury, may be employed. By means of this instrument we may reduce the reflex and peristaltic powers, in some measure, to numbers.

But first let me premise, that I propose hereafter to designate the reflex action and acts by the term *diastaltic*. The functions of all the *tubal orifices* and *exits* of the animal frame will be thus distinguished from all that is interior, as *dia*-staltic, the latter being *peri*-staltic, a term with which we are all perfectly familiar.

These words are very expressive and well contrasted. Others may be added, if this be deemed necessary, from the same root. An incident nerve may be designated *ana*-staltic; a reflex nerve, *cata*-staltic, &c.

The uterine actions are partly, I should think chiefly, diastaltic and partly peristaltic; and so of the other acts of ingestion and of expulsion, which are also still further influenced by emotion, modified by volition, and conjoined with sphincteric relaxation.

I formerly performed some interesting experiments on the rabbit and the turtle; which will be found in my volume "On the Disease and Derangement of the Nervous System." §§ 323, 330. The œsophagus in the former, and in the cloaca in the latter, are both diastaltic and peristaltic, The parturient uterus is doubtless so too. Its action may, we know, be excited through the spinal marrow, even from the mamma; and if detached altogether, and placed on the table, I have no doubt that, like the isolated œsophagus of the rabbit, it would slowly expel its contents. Dr. Tyler Smith actually observed this event, some months ago, in a small bitch which had died, without delivery. The abdomen and uterus being opened, the puppies escaped, and the uterus collapsed, or rather, contracted, so as almost to disappear.

I need scarcely refer to the observations and experiments of M. Brachet, and to the facts on record of post-mortem parturition in the human subject.

In regard to new experiments, this is what I would beg to propose:—

Having placed the animal under the influence of chloroform, and having introduced the dynamometer, first within the abdomen, and afterwards within the uterus, let us gently irritate.

1. *The Mamma;* 2. *The Vagini;* 3. *The Ovarium;* 4. *The Interior of the Uterus*, and apply a douche of cold water to 5. *The General Surface.*

Let us then observe the effect of irritation of the spinal marrow, as we proceed to its division or removal, upon the same instrument similarly placed.

Let us then remove the uterus entirely, place it on the table, introduce the dynamometer, and observe the effect of

1. *Peristaltic action;* 2. *Various irritations;* 3. *Galvanism, &c. &c.*

Lancet, Oct. 20. 1849, *p.* 438.

116.—MOVEMENTS OF THE UTERUS.—By Dr. W. Tyler Smith.

All muscles contract when subjected to immediate irritation, after they have been cut off from the influence of the cerebral and spinal centres, and when they have been as far as possible deprived of their nerves. In the case of muscles supplied by cerebral or spinal nerves, the contraction is limited to the spot irritated, and ceases with the removal of the irritation; but, in organs partly or wholly supplied by ganglionic nerves, as the heart, bladder, intestines, œsophagus, &c., the motion produced is of a peristaltic kind, spreading, generally in a vermicular manner, to a distance from the point of irritation, and continuing for some time after the irritation has ceased. The uterus is eminently endowed with this form of contraction. When one point of the uterus is stimulated through the abdominal parieties, the contraction excited extends with the utmost rapidity to the whole organ; the same occurs when the fingers are made to irritate any point of the internal surface of the uterus. Harvey beautifully described this peristaltic form of action in the uterus of the doe; William Hunter saw it in the cat and rabbit; Professor Muller in the uterus of the rat and the oviduct of the turtle; I have seen the same thing in the uterus of the guinea-pig and other animals. *This form of motor action is the basis of the other uterine actions.* In natural labour in the human female, it is, so to say, disguised by the reflex actions; but, under certain circumstances, it is able to effect, unaided, the expulsion of the child.

British and Foreign Medico-Chirurgical Review, July, 1849, *p.* 10.

117.—IMPROPRIETY OF FREQUENT OPERATIVE INTERFERENCE IN MIDWIFERY.—By Dr. R. Collins, Dublin.

[Dr. Collins gives an account of 3847 labours attended by the late Dr. Joseph Clarke, of Dublin, in which he used instruments remarkably seldom. Dr. Collins says[

It may be observed he only used the forceps once, and that without completing the delivery. If we seriously reflect upon the happy results to the *mothers*, from the practice pursued by this distinguished physician, as regards the use of instruments, and then carefully examine the succeeding section upon children *still-born*, and find here equally happy results (as of the 3816 *single* births, there was only *forty-two* children still-born of those that had arrived at the full period of gestation, or in the singularly small proportion of one in 91), we cannot fail to discover a number of *astounding* truths, sufficient to warn our *artificial* advocates and make them pause until *they can supply* their professional brethren with a series of facts equally satisfactory.

How seldom should most practitioners be found to use instruments, if the successful course pursued by Doctor Clarke were universally aimed at. Is it not worthy of our best consideration, with the invaluable statement before us, that, in an extent of practice in the upper ranks of life perhaps unexampled, there is not *one single instance of death* resulting from *laborious* or *protracted labour!* This is a practical fact, which ought to be carefully recollected, and seriously weighed, by most of our continental brethren, who use instruments in every 5th, 10th, 15th, 20th, or 30th labour under their care, with the object of expediting delivery; as also by some of our own countrymen, whose unsound doctrines inculcating mischievous interference to promote *hasty* delivery, the unquestionable truths here recorded clearly demonstrate to be most unjustifiable and most uncalled for. Should not this inexpressibly important record for ever silence those who venture to publish crude and fanciful opinions, unsupported by any data from their own experience affording similarly happy results. It affords me infinite satisfaction to supply this truthful registry of facts for the universal and serious consideration of the profession. These truths speak in language the most convincing, and must, when studied, leave an indelible impression.

Med. Gaz, July 20, 1849, p. 122.

118.—CASE OF POST PARTUM INERTIA UTERI, unattended by Hemorrhage.—By Dr. C. H. Higgins.

Notwithstanding that in ordinary cases, the only safeguard against post-partum hemorrhage is the equable and regular contraction of the uterus, yet the following case proves that the complete absence of such contraction for a considerable time after delivery, is not necessarily attended with hemorrhage.]

On the 8th July, 1843, I was summoned to a Mrs. H. æt. twenty-five, a person of leucophlegmatic temperament, who had been in labour for some hours with her first child. She was delivered of a live female infant at nine p. m., by means of the short forceps, the powers of the uterus failing after the head had descended to, and was resting on, the perineum; on which account, also, after a considerable interval, the placenta required to be extracted. The separation of the secundines was easily accomplished, but independent of any expressive efforts on the part of the uterus, which remained passive, and was perceived through the abdominal wall to be quite placid.

Suspecting that clots must be distending its cavity, and much alarmed with the apprehension of flooding, I immediately introduced the hand into the womb for the purpose of removing these, but was surprised to find the organ already quite empty and almost fully dilated, and showing no disposition to contract. Hoping to excite its action, I retained my hand in the

cavity for the space of nearly two hours, keeping up, at the same time, firm grasping pressure through the abdominal parietes, with the other hand, but all in vain, the organ remaining entirely passive. At length perceiving not the slightest tendency to hemorrhage, and worn out by anxiety, long watching, constrained position, and want of refreshment, I ventured to remove my hands, and putting on a firm abdominal bandage with a pad over the uterus, I left the patient, with whom I had now been uninterruptedly fourteen hours. In the course of half an hour I revisited her; no bleeding had manifested itself, and the uterus still remained latent to a great degree, although between two and three hours had elapsed since the separation of the placenta. Contractions however were gradually taking place, and the uterus ere long assumed the size and condition usual after delivery.

The labour in this case was remarkable for nothing but its lingering and atonic character. The patient's strength or courage never flagged, and she made a good recovery without a single draw-back. She has since borne two fine children, her labours being characterised only by the same want of tone as in the first instance. *Monthly Jour., July*, 1849, p. 898.

119.—CASE OF POST-PARTUM HEMORRHAGE TREATED BY COLD INJECTION OF THE UTERUS.—By Dr. W. Tyler Smith.

[This was a case in which the placenta adhered, but it had been removed artificially before Dr. Smith's arrival. Hemorrhage continuing, notwithstanding the application of a tight bandage to the abdomen and cold to the vulva, ergot and brandy were given, but with no beneficial effect.]

Matters, becoming urgent the abdominal bandage was removed, and the abdomen being laid quite bare, cold water was poured upon it from an ewer, held at a considerable height. After cold douching in this manner, warm flannels, with friction to the abdominal surface, were used, in order to obtain the full stimulus of *alternation*. But even these energetic measures failed in producing any decided contraction of the uterus or the arrest of the flooding.

Such being the state of the case, and feeling great anxiety for the patient's life, I now very cautiously introduced my hand into the uterus. The ostium vaginæ was contracted, but the vagina itself was very large, relaxed, and full of coagula. This great distention of the vagina, and the extreme relaxation of the abdominal muscles, appeared greatly to favour the relaxation of the uterus, and consequently the hemorrhage. The uterus was as soft and uncontractile as a pouch of wash leather.

I kept my flattened hand in the inert uterus, irritating, at the same time, in the most gentle manner, the internal surface of the organ with the tips of the fingers. Great and sustained pressure was made upon the abdomen externally by Dr. Fairbrother, and after a while, when his arm and hand became numbed by exertion, an assistant supported his elbow, so as to keep up the pressure. In this manner, uniform and sustained pressure was applied to the abdomen over the uncontracted uterus. The abdominal walls were too lax and prominent to admit of pressure upon the abdominal vessels above the uterus. By the effect of the direct uterine pressure, the bleeeding organ was compressed very completely, and the hemorrhage became more under command; still the uterus itself did not contract, and an oozing went on from time to time, now that we felt every ounce of blood to be literally of vital consequence. It was evident that the hand could not be withdrawn, or the external pressure remitted, without the utmost hazard of death.

After a temporary recovery from fainting, we made our patient swallow lumps of ice at short intervals. As each lump passed into the stomach, there was a distinct but transient contraction of the uterus. The organ would quiver upon my hand for a second or two, and then become inert as before. There was no safe or continued contraction to be produced by these means. The pulse continued rapid and fluttering, the breathiug gasping and hur-

ried, the eyes glassy, prominent, and fixed,—every moment, in fact, seemed to threaten dissolution. On two or three occasions, whilst we were thus engaged, there were sickness, syncope, and a sudden giving way of all the sphincters, just as in an animal in the very act of dying—the skin being cold, relaxed and covered with perspiration.

It will be, indeed, invaluable, if we could diagnosticate, in patients reduced to this extremity, between those cases in which the syncope is attended by uterine contraction, and in this way contributes to the arrest of the hemorrhage, and those other cases in which syncope is the commencement of the series of sinkings which end in death—syncopal dissolution. I believe there is no other diagnosis except the contraction or non-contraction of the uterus. The syncope with contraction is favourable in its results; the syncope without contraction is most dangerous, and often mortal.

As a last resource, I now had a quantity of iced water injected into the cavity of the uterus, in the following manner:—The pipe of a common enema-syringe was passed a little way into the vagini, between my arm and the perinæum, and the iced fluid was then suddenly injected along the side of the arm, until it filled the whole of the vagini, and penetrated into the cavity of the uterus.

As the cold water ran through my fingers, converting the whole hand into a cold tampon, I had the great happiness of feeling the uterus contract decidedly for the first time, so as to assume its rounded form. The uterus now stood up, as it were, to its work; and we were able, at this point, to relax the external pressure somewhat. I could now close my hand in the uterus, and the internal surface, from being spongy and shapeless, became smooth, elastic, and rounded.

After a short time, there being slight signs of reaction, the pulse, which had been carefully watched by Mr. Sewell, sinking to 100, and no more hemorrhage occurring, we consulted together, and I afterwards slowly withdrew my hand out of the uterus, placing, as a precautionary measure, a large piece of ice in the vagini. No hemorrhage followed the withdrawal of the hand, nor did any occur after this time. We were all considerably exhausted by upwards of two hours of excessive anxiety and no little exertion; but the life of our patient was happily saved.

One grain of opium and three grains of calomel were prescribed. The patient took a little arrowroot, and was kept, until after twelve o'clock, p. m., in the position she had been placed in during the flooding. Dry clothing was put about her, and the night was passed satisfactorily, and with scarcely a stain of discharge.

The after-treatment was of the most simple kind. The following day an injection of warm water into the vagini was recommended as a soothing measure. Slight abdominal tenderness arose, but was removed by a repetition of the opiate, and a sinapism to the abdominal surface. As nearly as we could ascertain, about four or five pints of blood were lost. For a week or two there were the usual symptoms of loss of blood; but the lochia appeared naturally, the milk was secreted in good quantity, and the patient was able to suckle her infant.

Remarks.—In this case, treated physiologically, all the motor powers of the uterus were attempted to be called out, and in vain, until the organ had recovered its nervi-motor power. Exhausted by delivery, the uterine energy was quite paralyzed, and for a time the organ refused to obey every form of stimulus.

The *direct* spinal actions of the uterus were stimulated by the ergot of rye, by the brandy, and by the maternal emotions. These remedies were directed from the spinal centre straight to the uterus, and with but little effect.

The purely *reflex* actions of the uterus were attempted to be excited by the cold douching of the vulva, by the sudden cold, alternated with fric-

tions and warmth to the abdominal surface, and by the ice taken int stomach.

The *peristaltic* uterine action was stimulated as far as possible by th mediate irritation of the uterus, by internal and external pressure, a cautious digitation upon the internal surface.

The influence of the iced injection was partly to excite *reflex* acti impression upon the internal uterine surface, and partly to stimula uterine muscular fibre itself. This latter effect it would have had uterus had been wholly separate from its nervous supply, in virtue muscular *irritability*, whilst the former action depended upon the u excito-motor nerves, and the spinal centre.

The flow of blood was attempted to be arrested *mechanically*, in the instance by the abdominal pad and bandage, and afterwards more suc fully by the hand in the uterus acting as a plug, and as an auxiliary t ternal pressure. In the nervi-motor condition of the uterus in this nothing could have compensated for the mechanical arrest of the flo for a time.

Side by side with these energetic remedies, the strength was supp by brandy; the respiration was kept up by sprinkling the face with water, by fanning, and by open doors and windows; the effect of lo blood upon the cerebrum was diminished, as far as possible, by pos and everything was done by word and deed to keep alive the hope and fidence of the patient, while she remained sensible.

Though the injection of the iced water had the chief merit of ind the final contraction of the uterus, I do not think anything else could been properly omitted, and I question if this application would have equally effective at an earlier period of the case; nor should we been justified in resorting to it, or, indeed, in introducing the hand int uterus, until other means had failed. The uterus was so thoroughly to all stimuli, that nothing but the mechanical arrest of the flooding time sufficiently long to allow the uterus to recover its excitability, have been sufficient. To gain time in such cases, without further lo blood, is to save life. Throughout, I was most ably seconded by Dr. brother and Mr. Sewell.

With respect to the introduction of cold or iced water into the u Of its excessive value in the present case there can be no doubt wha Injection of the uterus, in numerous forms, is a subject which has attr much attention of late. Some have recommended its injection by w the vagini, but unless the tube be placed within the os uteri, and re there, we cannot be certain of injecting the uterine cavity. Others recommended various mechanisms for placing a bladder in the uterus injecting this artificial reservoir. But it is a difficult matter, in a ca hemorrhage, to place a bladder in the uterus so that it shall be ret there. And why use a bladder at all? The contact of cold wate the surface of the uterus is of no more consequence than the contact cold bladder. It has indeed been *said* that the distended bladder will a pressure on the internal uterine surface, sufficient to arrest the ble mechanically.

But, in order to believe this, we must forget the obvious truth, th more the uterus distends, unless (impossible paradox) it should contr it distends, the more profuse would be the flooding. No! there is bu real principle in all the forms of apparatus which have been propose engraved—namely, the excitement of uterine contraction by the dire plication of cold to the lining of the uterus. I believe, therefore, that inventions, however ingenious, are, with all respect for their authors, of supererogation. If the hemorrhage be so excessive, and the uter dead, as to resist all ordinary stimuli, the injection of iced water wit hand introduced into the uterus, will I think, be found a more straig ward and efficacious plan than any of the uterine bladders or inje

which have been proposed. With the hand in the uterus, we are informed when the uterus is really injected, and we learn the effects of the injection. The hand is both a *guide* to the operation and *record* of its effects.

There is scarcely a more important point in the treatment of uterine hemorrhage than the introduction of the hand into the uterus. Whilst I would deprecate it in ordinary cases, and until other measures had been tried in vain, it is undoubtedly of extreme value in such cases as that which I have related, when the remote danger of uterine inflammation fades into insignificance, in the presence of the imminent and instant danger which already exists. But when introduced, it should be with a view to aid the effects of external pressure, and to arrest the hemorrhage mechanically, rather than with the idea of stimulating the uterus to immediate action. By this means we may assist the mechanical arrest of the flooding, and gain time for the recovery of uterine power. We may press vigorously upon the uterine walls, from without; but unless the hand be in the uterus, to measure the amount of the pressure, and its effects, and to form, as it were, an internal pad, upon which the pressure may be exerted, the patient may die whilst the abdomen is being compressed with considerable force. *Lancet, July* 7, 1849, *p.* 6.

130.—PATHOLOGY OF PUERPERAL CONVULSIONS.—By Drs. Cormack and Tyler Smith.

At a meeting of the Westminister Medical Society, Dr. Cormack detailed several cases with a view to point out the connexion between renal congestion and puerperal convulsions.]

He considered puerperal convulsions to be—though not always, yet generally—the toxicological results of non-elimination of the excretion of the blood: and that, in by far the greater number of cases, this non-elimination depends on renal congestion, caused by the pressure of the gravid uterus. Œdema and albuminuria are frequent concomitants or precursors of convulsions, as shown by Dr. Lever and by MM. Devilliers and Regnault. The gravid uterus, or any tumour pressing on the renal veins, must cause congestion of the kidneys, and consequent toxæmia; and this is the more injurious to the pregnant woman, as her blood requires an extra degree of depuration, both from the excrementitious matter from the fœtus, and also from the elements of milk. Retention of these should, Dr. Cormack thought, be considered as the cause not only of convulsions, but also of various other distressing symptoms occuring during pregnancy. Uterine epilepsy probably often arises from toxæmia; and the suppression of the lochia may induce post-partum puerperal convulsions. When convulsions recur after delivery, we must suspect structural renal disease. The explanation of delivery generally arresting convulsions is not so much that uterine irritation is lessened, as that the hyperæmic state of the kidneys is relieved. The most common subjects of puerperal convulsions are strong, healthy, young women, pregnant for the first time; and an examination of the cases recorded by authors proves this fact. In them the abdominal walls are most unyielding, and unable to relax under the pressure of the gravid womb. Cases of puerperal convulsions in subsequent pregnancies might be either toxæmic or non-toxæmic, the toxæmic cases might be classed under the following heads:—1. Persons who had never gone to the full time. 2. Persons of extreme muscular development. 3. Persons suffering from structural disease or obstruction of the kidney. 4. Excessive volume of uterine contents, including twin cases, &c. Dr. Cormack was desirous of drawing attention to toxæmia as a cause of puerperal convulsions, and also of recognizing non-toxæmic convulsions. He thought that Dr. Tyler Smith, who had treated this subject more philosophically than any preceding writer, had, whilst recognising toxæmia, attached too little importance to it. The

following diagram, shows that the relation of toxæmia to puerperal convulsions:—

PREGNANCY
causes

Increased necessity for depuration of blood	A tumour (gravid uterus) causing renal congestion which causes
	Non-elimination of poisonous excrement from blood, TOXÆMIA, which causes
	Action on brain, spinal marrow, and medulla oblongata, hence result CONVULSIONS.

Dr. Tyler Smith expressed his sense of the importance of the view taken by Dr. Cormack. He considered it would be difficult to estimate too highly the influence of impurity of the blood, as a direct irritant of the nervous centres in pregnancy. It was necessary to take a comprehensive view of the causes of blood-poisoning dependent on the pressure of the gravid uterus. There was the pressure on the intestinal canal, causing constipation; there was the pressure upon the emulgent veins, causing albuminuria, and the retention of urea in the blood; there was the pressure upon the hepatic vessels, which he had frequently observed to produce pink deposits in the urine; and lastly, there was deficient oxygenation of the blood from pressure upon the thoracic viscera.

All these agencies interfered with the proper depuration of the blood in advanced pregnancy, and often produced distressing nervous symptoms. But it was curious to observe that during pregnancy certain vicarious or complementary secretions and excretions were set up, which tended to preserve the blood in a healthy state. There was the sickness and vomiting of pregnancy, the salivation which sometimes occurred, the increased action of the glands of the axillæ and of the skin generally, and the secretion of milk by the mammæ, which was sometimes profuse during the latter months, particularly in cases of albuminuria. All these actions tended to compensate, and were no doubt intended to compensate, for the effects of pressure upon other organs. The fœtus also must be considered as an excretion, so far as the mother is concerned; and a large quantity of matter, which would otherwise have to be eliminated as effete from the maternal blood, went to form the liquor amnii, the membranes, the bones of the fœtus, the meconium, fœtal urine, &c. These points required consideration in our estimate of the state of the blood in gestation. Still, there could be no doubt that in many cases an impure state of this fluid, a true toxæmia, did obtain, and affected the spinal centre, the organ of convulsions, in a centric or direct manner. He believed this to be a predisposing rather than an exciting cause. It was only when the toxæmia was very intense, as in poisoning by carbonic acid, that convulsions, depending solely upon the state of the blood, occurred. If it were otherwise, convulsions would often occur independently of the excitement of parturition. But we generally saw that convulsion was actually excited when the predisposition existed, by some manifest irritation acting in a reflex manner, such as the irritation of the parturient passages during labour, or irritation of the stomach, bladder, or intestines. *Med. Gaz., June 15, 1849, p. 1046.*

121.—PHENOMENA OF GENERATION.—By Professor Owen.

The essential conditions appear to be a nucleated cell, the product of a nucleated cell, and the combination of the two; the ovum having received the matter of the spermatozoon, is said to be impregnated, and the phenomena that thence arise are essentially the same, up to a certain point, in all animals, and consist of the formation of a germ-cell and its propagation of a numerous offspring, at the cost of the germ-yolk, by a series of reiterated spontaneous divisions. The progeny of the primary impregnated germ-cell, which may be called secondary germ-cells constitute the germ-mass; this progeny resemble their parent with a diminution of size, to a certain stage of descent, when they may be ultimately reduced to their essential parts or nuclei. But when they cease to exist as germ-cells, they minister to the life of a being higher than themselves, combining to construct its tissues, and to impart important properties to its fluids. But, says Professor Owen, not all the progeny of the primary impregnated germ-cell are required for the formation of the body in all animals; certain of the derivative germ-cells may remain unchanged and become included in that body, which has been composed of their metamorphosed and diversely combined or confluent brethren; so included, any derivative germ-cell, or the nucleus of such, may commence and repeat the same process of growth by imbibition, and of propagation by spontaneous fission, as those to which itself owed its origin; followed by metamorphoses and combinations of the germ-masses so produced, which concur to the development of another individual.

London Journal of Medicine, July, 1849, p. 629.

122.—NOTE ON THE PHYSIOLOGY OF IMPREGNATION.—By Dr. H. Oldham.

[A case came under Dr. Oldham's notice, in which he states, he was well assured,]

That the last day of her last menstrual period was the 16th of January—that sexual intercourse occurred on the 28th of January—that it had not taken place for several weeks before, and has not been repeated since, and consequently she was impregnated twelve days after menstruating. This has an important experimental reference to the modern theory of generation, which makes the menstrual period correspond with œstruation in the lower animals, and limits the period of conception to a day or two before, and about eight days after the flux. During this time it is affirmed that an ovum has been spontaneously cast off from the ovary, and during its slow movement through the sexual passages, that it may be impregnated; but should it not be impregnated, that the female cannot conceive until a day or two before the next menstrual or œstrual time. The physical impossibility of pregnancy during this interval is not blinked by the supporters of this theory. You see if this were true it would have a most important and practical bearing. It constantly happens that cases come before us where either from disease of the uterus or pelvis, or sexual organs, or exhaustion from frequent abortions or protracted labours,—that it would be most desirable to suspend for a time or altogether prevent pregnancy. And this might be done were this really a physiological law, and without imposing a much greater restraint on sexual indulgence than does the old Rabbinical law. But the truth is, that this theory has been prematurely shaped into a law, and it will not, I am sure, bear a practical test. I know of cases, which I have carefully inquired into, where impregnation occurred at the respective times of ten days, twelve days, and twenty-one days after the monthly periods; and whilst, on the one hand, I am quite ready to admit a greater disposition to impregnation shortly after a menstrual period, yet I know of no facts to disprove the opinion that the human female is susceptible of impregnation at any time between her monthly periods.

Look at an ovary, when you know that a fecundated ovum has been cast

out from a Graafian follicle, and no matter when you examine it—whether a few days or a few months after its dehiscence,—there is a sure sign of its escape in the presence of a corpus luteum. Nothing can be more distinct or characteristic than this. And when ova have been detached at the œstrum of the lower animals, without sexual congress, corpora lutea have been seen in no respect differing from the ordinary corpora lutea. But at the so-called œstrum of the human female—at her menstrual time—I am quite convinced that no bodies, such as I know to be corpora lutea, are met with. And I infer from this that no ovum or ova have escaped.

Med. Gaz. July 18, 1849, *p.* 48.

123.—ON THE INDUCTION OF ABORTION BY PUNCTURING THE OVUM.—By Dr. H. Oldham, Lecturer on Midwifery at Guy's Hospital.

The common plan which I adopt for opening the ovum by puncturing the membranes, is by employing an instrument which consists of a cylindrical silver canula, slightly curved at its further end, with a single opening, and two wire loops projecting from the sides of the other extremity, through which two fingers may be passed to hold and fix it. A moveable stilette, tipped with a sharp point like a trocar, and so cut that the point does not touch the sides of the cylinder when the stilette is run through it, can be made at option to pass beyond the end of the canula. The way to use it is this:—Place the patient, if you like, on the left side, run up the index finger of the left hand to the os uteri, and if possible *within* it; then guide the instrument with the point of the stilette concealed in the canula, on the finger, within the uterus, and carry it forward until you feel that there is some resistance; then press the point of the stilette against the membranes and press the canula a little further on. Then withdraw the stilette and let the liquor amnii flow throw the canula. It is a good precautionary point to prevent the waters breaking forth too impetuously, because in doing so, either a loop of funis, or a hand, or even a leg (as I have once known), may be washed down by the side of the presenting part, and complicate the case.

You can do much more with the body of the womb with the patient on the back than on the side. Your two hands can act so much better in concert: you can impress the contents of the womb, and really, in some cases, when the fluid contents of the ovum are large, as is the case in the fourth month to the sixth, you can sometimes gather the fœtus up to one part; and again, by pressure downwards, you can make a column of the liq. amnii press out the membranes, rendering them more tense, and so help their puncture.

You may learn a great deal, both in midwifery and in the organic diseases of the womb, by always examining *the body of the womb*, and not merely its os and cervix.

The *time* which elapses between the puncture of the ovum and the supervention of labour varies very much in different cases. Five or nearly six days is a long interval, the longest that in my own experience I have known. The period of gestation probably has something to do in retarding it.

Before quitting this matter of puncturing the ovum in early pregnancy, I wish you to bear in mind that a few weeks of development makes a great deal of difference in the anatomical relations of the ovum. I punctured the amnion in one case in the eighteenth week, when the ovum well fills the cavity of the uterus; but supposing I had done so between the second and third months: well, in that case, if you examine this preparation (an impregnated uterus at the second month), you will see that the ovum, covered by its vascular reflex decidua, occupies only a part of the cavity of the uterus, and that there is a second large cavity, if I may so say, which, as it is lined entirely by the uterine and reflex decidua, is pro-

perly enough termed the decidual cavity. Now, this cavity is of great importance to the early ovum. It holds an embryotrophe, which is secreted by the glands of the uterine decidua, and is conveyed to the ovum through the cells of the reflex decidua. It is thus a source of nutrition to it—a kind of supplementary digestive sac. Besides this, it has a mechanical action, and holds off the dense uterine walls from the growing ovum, so as to allow the latter to expand, which at length it does to the entire obliteration of the decidual cavity. Well, then, what would you do if you passed a sound into such a uterus as this? You would, of course, unless the placenta was over the os uteri, at once open this cavity. And now comes the practical point—Would this be the equivalent of tapping the ovum? The cavity would necessarily be emptied by the fluid flowing out, which would accomplish two things:—1st. It would withdraw from the ovum an important source of its nutrition, and 2ndly, the walls would sink and contract upon it, which would go far to flatten or crush it; and I cannot but think that this would generally be sufficient to cause abortion. At any rate it is a lesser operation, which may well be attempted at first. If you are obliged to puncture an ovum at a very early period, it requires great care, lest you injure and inflame the uterus: and also by lessening the already small ovum, and destroying its shape as an oval sac, you impose a far greater difficulty on the womb to cast it off. Indeed, the collapsed membranes may be retained for ten days or even weeks, and be cast off piecemeal, with fœtid discharges and recurring hemorrhages; and the female, by the time the uterus is cleared, be left in a feeble and exhausted state. I believe, if you have ever to conduct a responsible case of the kind, (I am speaking of an early period, say the sixth month), it would be better for you to be content with opening only the decidual cavity, and excite the uterus by other means, or postpone, if possible, the puncture of the ovum until the sixteenth week.

Med. Gaz. July 13, 1849, *p.* 51.

124.—CASE OF ABORTION PRODUCED BY METASTASIS IN CYNANCHE PAROTIDŒA.—By T. Salter, Esq., F.L.S., Poole.

[Mr. Salter's patient was a lady about twenty-five years of age, who was attacked with cynanche parotidœa when advanced just beyond the third month of her third pregnancy. (She had gone to the full time in her previous pregnances.) The usual treatment was adopted. After a day or two of vaginal discharge, uterine pains and hemorrhage came on suddenly in the night, and a fœtus was discharged. The hemorrhage continuing, Mr. Salter gave ergot of rye, and adopted other proper treatment, and in fifteen hours after the birth of the fœtus, he was enabled to remove the placenta. Mr. S. says:]

I was much surprised at the appearance of the placenta, to which organ it had very little apparent resemblance: it was about the size of my two closed hands, and had the look of a large coagulum; and had not about two inches of the torn funis remained connected with its centre, it might readily have been mistaken for such. On closer inspection, however, the amnion was observed to be extended over the fœtal surface of the organ, and the decidua over the opposite or maternal aspect: between these two membranes, and within the cellular structure of the placenta, a large mass of blood, which constituted the chief bulk of the secundines, was contained. The resemblance to a coagulum consisted not merely in its external aspect, but a section of the mass, which was an inch and a half in thickness, exhibited an equally apparent likeness to coagulum. There was, however, a small portion, about an inch square, in a normal state; but it was only by maceration, and squeezing out the blood, that the other and larger division was brought to exhibit the characteristics of true placenta.

Remarks.—Among the various causes of abortion, hemorrhage into the

independent, though closely linked together, as are other phenomena having a common purpose. The ovarian excitement tends to the maturation and discharge of ova; the uterine, to the formation of a decidua. The former may never be perfected, and yet the latter may completely take place. On the other hand, the former may take place effectually, and yet the latter may not occur in any degree consentaneously. Again, the phenomena of suspended and of vicarious menstruation appear to us to indicate that the periodicity is not simply ovarian but constitutional; the periodical loss of a certain part of the contents of the sanguiferous system being required for the maintenance of the healthy condition of the system at large. Fully admitting that in a large number of cases, amenorrhœa is rather the result than the cause of the general disorder, we yet think it impossible to contemplate the results of the suspension of normal menstruation by some local cause, without coming to the conclusion that, whether the menstrual flux consist of pure blood, or of certain of its constituents more or less altered, its removal from the sanguineous current is required to keep the latter in its due condition. This we can understand, even if these constituents should be no others than those adapted to become organized into a decidual membrane; since, as Mr. Paget (following Treviranus) has pointed out, the constituents of any organized tissue stand to the remainder of the body in the condition of materials destined for excretion.

We are disposed, then, to regard the uterine excitement as by no means so entirely dependent upon the ovarian as our author would have us believe. Although usually consentaneous, either *may* occur independently of the other; and there is no constant correspondence between the degree in which the two organs respectively are affected. Here, as elsewhere, we see the necessity of attending to the *exceptional* cases. To put them aside as mere "abberrations of a theory," is obviously unphilosophical. No theory can be complete which does not include the unusual as well as the ordinary phenomena; and it frequently happens that the greatest amount of information is obtained respecting the condition of the latter, from the careful observation of the former.—In his zeal for the prerogative functions of the ovaria, Dr. T. Smith goes so far as to assert his conviction that the greater part of the pain in dysmenorrhœa consists in ovarialgia; "the deep lumbar pain being decidedly ovarian and not uterine."

Dr. T. Smith's experience of this disorder must, we apprehend, be rather limited, or his observations must be very much swayed by his preconceived hypothesis; for many a woman can assure him that her monthly pains bear a close resemblance to those of the first stage of labour; and he will not, we presume, assert that *these* are entirely ovarian. "Uterine disturbance must be considered as a secondary condition—an aggravated symptom of ovarian excitement in painful menstruation." He is, "decidedly opposed to the view that dysmenorrhœa is *caused*, in the majority of cases, by chronic inflammation of the os and cervix uteri. The relation between dysmenorrhœa and inflammation of the os uteri is one of coincidence, not of causation, nay, it is often a symptom induced by ovarian irritation, a symptom requiring palliation, but the relief of which by no means constitutes the whole of our treatment." We would not go so far as to assert that the cause of dysmenorrhœa is to be found in the inflamed or strictured condition of the os uteri "in a majority of cases;" but that in a large number of instances, the violent pains and spasms attending the return of the catamenial period are directly consequent upon the morbid condition or malformation of the uterus, is proved by the immediate relief which the judicious treatment of these conditions affords. If ovarian disorder participate at all in the general distress, it must therefore be as a secondary consequence of the undue uterine excitement.

[The reviewer next proceeds to discuss Dr. Smith's opinions respecting the origin of the parturient actions. These opinions are stated in the following extract from Dr. Smith's work:]

"I believe that at the time of parturition in mammalia, the uterus and the uterine nervous system are excited by the ovaria; that it is the ovarian excitement which induces both the permanent contraction of the uterus immediately before the coming on of labour, and the tendency to those reflex, emotional, and peristaltic actions, by which parturition is completed. In menstruation, a small synergic and reflex arc is described between the ovaria and the Fallopian tubes: in parturition, a larger arc is in operation extending from the ovaria to the uterus. According to my researches, the excitement of the uterine nervous system at parturition, upon the presence of which the due performance of this function depends, is caused by ovarian excitement. At the time of ordinary menstruation, the ovarian irritation which excites the contraction and rigidity of the Fallopian tubes is manifest. Throughout utero-gestation, the ovarian excitement returns in a slight degree at each periodic date; but at the eleventh period after conception (reckoning the last catamenial period inclusively) the ovarian excitement returns in full force, and, as a consequence, the uterine excitability and the uterine actions of labour begin."

According to Dr. Smith, therefore, the mascular excitability of the uterus at the full term is dependent upon the ovarian excitement; and the occurrence of its contractions on the 280th day (or thereabouts) after conception is a reflex phenomenon, for which the exciting cause is to be found in the eleventh periodical access of ovarian excitement. We quote the following passage from the Appendix, in order to show how much of this doctrine is regarded by Dr. T. Smith as his own, and how far he considers himself to have been anticipated in it by those obstetricians, who have held similar views with himself as to the coincidence between the ordinary duration of pregnancy and ten menstrual periods:

"The following extract from Dr. Fleetwood Churchill's work on the 'Theory and Practice of Midwifery,' shows how perfectly the idea of the regular duration of pregnancy, and the relation of parturition to the catamenial periodicity, may exist, without any idea of the cause of labour. Dr. Churchill is perfectly conversant with 'the fact,' that the average duration of pregnancy is 280 days, or a time equalling ten catamenial periods; and he suspects that labour comes on at the tenth period after impregnation; but the 'exciting cause' is quite undiscovered. It is the knowledge of an excitor spinal nerve in the ovarium which is the one great point wanting, and without which the mere fact of periodicity is confused and of little value. I insist upon this point strongly, because attempts have been already made by those who confound *cause* with mere *coincidence* and *time*, to set aside my claim to whatever merit may lie in the detection of the cause of labour. The passage I quote proves that it is quite possible to have a tolerably accurate notion of the 'utero ovarian periodicity' of pregnancy, and yet to consider that 'all search has hitherto failed in discovering the exciting cause of labour.' Obstetricians might have gone on, as they had done before, from generation to generation, repeating to themselves the fact, that the duration of gestation is a multiple of the catamenial period, without any conception of the ovario-uterine nervous arc, which excites the uterus to parturient action."

[The reviewer objects to this, that Dr. Smith has not shown either upon anatomical or experimental evidence, the existence of the "ovario-uterine nervous arc." He observes that]

He has not proved that any more direct communication exists between the ovaries, the uterus, and the spinal cord, than that which is established through the spinal fibres intermingled with the sympathetic; whose endowments differ so much with those of ordinary spinal nerves, that any arguments founded upon the analogy of the latter are unsafe in their application to the former. He has not shown that irritation of the uterine nerves will at any time excite parturient actions in the uterus. He has not shown that section of these nerves prevents the access of the parturient actions at the usual period. Still less has he shown that irritation of

the ovarian nerves will excite uterine contractions by reflex agency; or that section of the ovarian nerves, by interrupting the continuity of the "ovario-uterine nervous arc," will prevent the access of the parturient efforts of the uterus at the regular period. All this he must demonstrate experimentally, before he can be admitted to have established his position, that the ovarian nerves stand in the same relation to the act of parturition as do the pneumogastric to that of respiration. Not one particle of evidence on this subject is adduced by him, except that afforded by the experiments of MM. Brachet and Segalas, of which we have already disposed. Before leaving this part of the inquiry, we must remark that Dr. T. Smith seeks to establish a relation even more intimate than that to which he refers for illustration; for every physiologist knows that there are many excitors to reflex action in addition to the pneumogastrics; so that section of the latter diminishes the frequency of the respiratory movements, but does not suspend them altogether; whereas Dr. T. Smith refers so exclusively to the ovarian nerves as the excitors of parturition, that this action would seem, in his view, to be entirely dependent upon the stimulus which they supply.

The evidence upon which Dr. T. Smith relies, is, to our minds, of far too vague and unsatisfactory a nature to be admitted as *establishing* a principle of such importance, even if there were no opposing considerations of any weight. It consists of little else than a reiteration of the facts and arguments he has already adduced respecting the coincidence between uterine action and ovarian excitement; together with other facts, the relevancy of which we cannot admit.

[The following evidence is adduced by Dr. Smith in support of his views, derived from the phenomena of human parturition.]

"The duration of human pregnancy is well known to be a multiple of a catamenial period. It has also been observed that, in rare cases, where the duration of pregnancy exceeds the ten menstrual periods, the function of parturition is deferred to the following period, so as to make pregnancy reach to eleven periods inclusive. This fact came out most clearly in the obstetric evidence on the Gardner peerage case, and will prove of very great importance in cases of supposed criminality in wedlock, or in establishing the legitimacy of posthumous children. On the other hand, it is well known, that when utero-gestation is brought to a premature termination, it is at what would have been a menstrual period that abortion usually takes place. There is, in fact, in all women a tendency to abortion at the times represented by the catamenial periods. In placenta prœvia, the hemorrhage occurring in the later months of pregnancy generally happens at the periodic dates. Hemorrhage sometimes occurs for two or three periods in succession before parturition in these cases, with perfect impunity in the intervals. The occurrence of uterine pains at the termination of the natural period of gestation, in cases of extra-uterine fœtation, points very decidedly to the operation of some extra-uterine source of excitement. After abortion—and very speedily too, in some cases,—it is known that there is a remarkable aptitude to conceive; and during the catamenial climacteric, when the ovaria are irregularly excited, there is frequently an increased tendency both to conception and abortion. These accumulated facts are sufficient to establish the influence of the ovaria and of the ovarian function on the uterine phenomena of gestation and parturition. But to complete the evidence, we must inquire what proofs there are that the sexual excitement which attends exaltation of the ovarian irritability in the lower animals, is present in the human subject. An attentive observer will not fail to perceive the existence of this excitement, though in a rudimentary degree. I have insisted in a former lecture, that there is an actual increase of the sexual emotion during, or immediately after, the catamenial periods. There are also distinct traces of sexual excitement in some cases of parturition. That they are not always present does not tell against my argument, because the reasons why they are not so present are very evident."

Dr. T. Smith then goes on to state objections to the use of anæsthetic agents in parturition, on the ground of their removing the moral restraint which ordinarily keeps these feelings in check; and then returns to his position that "parturition does not merely occur at what would otherwise be a menstrual period, but *is essentially a menstrual period.*" The "show" is regarded by him as the equivalent of the access of the catamenial discharge; the lochial flow as its continuation, altered by the admixture of discharges from the placental site. He refers to the lochial flow which occurs after abortion in the early months of pregnancy, as indicating that it is something else than a discharge from the placental site; and he states that having examined the internal surface of the uterus after death in parturition, he has seen the whole of it dyed with the sanguineous secretion.

If Dr. T. Smith's doctrine were rigorously true, the duration of pregnancy ought to be 280 day in those cases *only* in which conception takes place *immediately before* the regular period for the return of the catamenia; since the commencement of parturition answers, according to him, to the commencement of œstruation. In those cases, usually considered to form the great majority, in which conception takes place at an early period *after* the cessation of the catamenia, if labour comes on at the eleventh menstrual period, the intervening time must be 280 days *less* the time which elapsed between the date of conception and the commencement of the antecedent menstruation. Thus, for example, if the menstrual flux usually occupy five days, and conception take place on the s xth from its commencement, the eleventh recurrence of the menstrual flux, which ought, on Dr. T. Smith's hypothesis, to fix the date of parturition, will fall on the 280th day from that commencement, but on the 274th day from the date of conception; in other words, the duration of gestation would be only 274 days. Now we knew a case in which the date of two conceptions could be exactly ascertained. The first took place on the day before the catamenial period; the menstrual flux appeared at the usual time; but its duration and amount were greatly reduced. Labour supervened on the 280th day from the date of conception; that is, at the time when the eleventh catamenial period would have commenced. But in another pregnancy in the same individual, the date of conception was the fourth day after the cessation of the catamenial flow, and this had lasted seven days; nevertheless, labour supervened as before, on the 280th day, that is *eleven days later* than the time for the eleventh recurrence of the catamenial period. This is not an exceptional case. We are confident that the general experience of accoucheurs will accord with our own, in the conclusion that where the date of conception can be exactly ascertained, labour may be expected to commence on the 280th day, without any reference to the question whether or not the conception took place before or after the catamenial period, which may be considered, on the average, to make a difference of at least a week. We have not found any reference to this difficulty in Dr. T. Smith's discussion; in fact, in his 'Periodoscope,' he unhesitatingly assigns 280 days as the regular term of gestation, and gives directions for determining the various periods of expected abortion, &c., all of which are to date from the day of conception,—as if it were a matter of perfect indifference whether that conception had occurred before or after the menstrual period.

We have tested the correctness of Dr. T. Smith's hypothesis by the ordinary experience of obstetric practitioners. We shall now test it by exceptional cases, which afford still stronger evidence of the want of that *necessary* connexion between the two phenomena in question, which alone can give to them the relation of cause and effect. Every accoucheur is acquainted with instances in which the menstrual period is something different from 28 days; for instance, 21, 25, or 30. Now if the term of gestation be necessarily a multiple of that period, it ought not to be affected by any such irregularity. Of such a modification, however, we have no

evidence; but on the other hand, we have much proof to the contrary. In the case we have just cited, the catamenial period is only 26 days; the menstrual flux returning with the usual regularity at this shortened interval. Now if the uterine action in parturition were dependent upon the recurrence of œstruation, the term of gestation in such a case ought to be 260 days; or, if that term be exceeded, it ought to be protracted to another period of œstruation, in which case it would be 289 days; yet in three pregnances it has been 280 days, as usual. We could cite many other cases of the same kind; all of them equally tending to support our position that the uterine act of parturition is independent of ovarian œstruation; and that where the two occur simultaneously, the relation is one of coincidence merely.

Another proof to the same effect is derivable from the phenomena of protracted gestation. Dr. T. Smith affirms, in the passage we have already cited, that "in the rare cases where the duration of pregnancy exceeds the ten menstrual periods, the function of parturition is deferred to the following period, so as to make pregnancy reach to eleven periods inclusive. This fact came out most clearly in the obstetric evidence on the Gardner peerage case." We could scarcely cite a stronger instance than this of Dr. T. Smith's rashness of statement, and disregard of all facts but such as tend to confirm his own hypothesis. It must be remembered that in the Gardner peerage case, the object of those who sought to establish the legitimacy of the offspring was to show that pregnancy might be protracted to 311 days, or 31 days beyond the usual term: and in the medical testimony that was adduced to prove the possibility of such an extension of the usual term, any minor degrees of prolongation would of course be less attended to. Yet it will be obvious we are sure, to those who will go through the evidence given on this case, that there is nothing even there to justify the assertion, that pregnancy, if protracted at all beyond the tenth catamenial period, extends to the eleventh. In the table published by Dr. Merriman, who was one of the witnesses upon that occasion, it is expressly stated that whilst 33 women were delivered in the 40th week, 22 were delivered in the 41st, 15 in the 42nd, 10 in the 43rd, and only 4 in the 44th. Yet, according to Dr. T. Smith's assertion, all the women who passed the 40th week ought to have retained their ova until the 44th. Nature, however, refuses to tie herself down to such rules.

Dr. Murphy, in his 'Report of the Obstetric Practice of University College for 1844,' gives a similar table, in which it is stated that whilst 24 women were delivered in the 39th week, 25 in the 40th, and 32 in the 41st, 25 were delivered in the 42nd week, 19 in the 43rd, 9 in the 44th, and 11 in the 45th. We believe that all these cases are open to the objection that the date of conception was not known, and that impregnation was presumed to have occurred immediately *after* the last recurrence of the catamenia; whereas it might have taken place just *before* the next œstruation, which appears to be the case with those Jewish females who observe the Rabbinical law of abstinence from sexual intercourse for five days beyond the period laid down by Moses. This would cut off about three weeks from the presumed period of gestation, and would probably tend to reduce a large proportion of the cases of supposed protraction to the regular term. But it will not do so by any means in all cases; and moreover we have an amount of trustworthy evidence, derived from cases in which the day of conception could be fixed, and in which there was no motive for falsification, sufficient to establish the possibility of protraction beyond the usual term, for *any number* of days or weeks *less* than the additional month; how much *more* may be allowed, can scarcely be considered as yet decided.

The evidence of comparative gestation is all to the same effect: and we cannot refrain from asking why Dr. T. Smith has kept it back, when he is evidently acquainted with at least that part of it supplied by Tessier, and himself contends that, "a comparison between human and comparative

parturition, and all the other forms of parturient action, is essentially and absolutely necessary to a comprehension of this branch of human physiology." If it be admitted that we have a right to reason from the one case to the other, it is obvious that the class of phenomena in question affords most satisfactory evidence in regard to variability in the term of gestation; since the date of conception can be more positively determined than is usually possible in the case of the human female. In addition to the observations of Tessier, we have now a long series carried on upon the cow, under the direction of the late Earl Spencer; from which it appears that, the average term of gestation in that animal being 284 or 285 days, an excess of a few days is not at all uncommon; whilst a prolongation to the extent of a fortnight or three weeks is much more common than an extension to a month. We shall presently speak of one very curious part of these observations; from which it appears that the *male* parent exerts an influence over the term of gestation, a phenomenon altogether inconsistent with Dr. T. Smith's hypothesis.

Having now tested the value of Dr. T. Smith's hypothesis by applying it to three different classes of facts which are altogether unnoticed by him, and having found it deficient even in the attribute of probability, still more in any claim to be received as a demonstrated truth, we might leave the question where we found it, and say, as many have said before us, that no account whatever could be given of the ordinary limitation of the term of gestation to 280 days. Even if no valid explanation can be given, however, it seems to us that it will be useful to know in what direction we are to seek for one; at any rate, it cannot but be advantageous to point out certain facts which any theory on the subject ought to embrace.

In the first place, then, it must be admitted on all hands that there is a certain disposition or tendency, on the part of the uterus, to disburthen itself of its contents at the termination of the fortieth week of gestation, rather than at any other time. Even if we grant, with Dr. T. Smith, that at each period of œstruation during pregnancy there is a tendency to abortion, we have still a right to ask why, in such a vast majority of cases, the fœtus is retained until the tenth of these periods has elapsed, and is then ejected? Why should not labour take place just as readily at the *tenth* as at the *eleventh* œstrum; and why should it be so very seldom deferred, until the *twelfth*? We cannot see that Dr. T. Smith can give any other answer to these questions, than that the uterus and its contents are then in such a condition, as to render the ovarian stimulus far more effectual at that time than at any other. In assigning the ovarian stimulus, then, as *the cause* of parturition, Dr. T. Smith has altogether left out of view the fact that this cannot operate alone; and that unless there be, coincidently with this, a certain peculiar readiness on the part of the uterus to part with its contents, labour would no more come on at the end of the tenth monthly period than at the close of the ninth.

As he has not shown whence this arises, we must consider him as having advanced but little in the explanation of the causes of parturition, even if we concede to him all that he demands. The act of parturition was likened by Buffon to the dropping of ripe fruit; and we believe, that in seeking for its cause partly (to say the least) in that condition of the uterus and its contents which may be designated as *maturation*, we are justified by all the facts at present known to us. The phenomena of the separation of the offspring from the parent, as a consequence of the completion of certain stages of growth on the part of the former, the loosening of the connexion between them being a part of this sequence of changes, are seen very extensively through the organized world; and they are obviously analogous to the phenomena of separation and detachment, which occur in the parts of an integral structure during its evolution. No one has any difficulty in understanding that the fall of the leaf is due to the death of the tissue which connects it with the stem; or that the opening of a flower is the result of the turgescence of

its tissue, consequent upon its full development. Every one knows that there are flowers whose first opening takes place with great regularity at a particular hour; we have ourselves repeatedly witnessed this in a West Indian species of amaryllis, the long floral leaves of which became detached from each other, and sprung apart, within a few minutes before or after six o'clock in the evening. Although many vegetable and animal periodicities may be shown to be under the influence of external agencies to a certain extent, yet there is ample proof that they are essentially independent of such agencies, and that they form parts of that cycle of phenomena, of which the whole life of the being, from its origin to its final decay, is made up. We do not see anything more wonderful in the recurrence of certain changes at particular times, than in the progressive evolution of the entire organism. The exuviation of the milk-teeth, for example, in a certain regular succession, and at such uniform times, as to afford one of the best tests of the age of the individual, is a phenomenon which strongly marks the disposition in the human system to the spontaneous severance of a vital connexion which has served its purpose, and to the detachment of the part in which it has ceased to exist.

We have adequate reason to believe that the embryo of warm-blooded animals is extremely regular as to its term of development. Thus, in the common fowl, we may calculate almost to an hour (provided that the eggs have not been detained in the oviduct of the hen) the time when the chick will emerge from the shell. And it is well known that the stages of progressive development in the human fœtus afford indications from which its age can be determined, with a pretty close approximation to truth. That the development of the uterine structure goes on *pari passu* with that of the contained fœtus, appears equally evident from a consideration of its phenomena; especially those attending the formation of the placenta, in which organ there is such a marvellous commingling of parts, formed from two distinct and independent centres of development. Now we see pretty clear indications that the placenta of the fully-developed fœtus is somewhat in the condition of the footstalk of a ripening fruit; that is, that having attained its full evolution as an organ of temporary function, its connexion has a tendency to become dissevered, in virtue of causes inherent in itself alone, and quite independent of external agency. Something of this kind seems to have been recognized by Dr. T. Smith himself, who expresses himself, in his chapter on abortion, to the following effect:

"The placenta has a tendency to become unfit for fœtal respiration towards the end of the utero-gestation, when nature is preparing for the change from branchical to pulmonary breathing. There are frequently observed on the surface of the mature placenta crystals of carbonate of lime, which must tend to interfere with its functions as a respiratory apparatus, and generally, I believe, to facilitate its separation from the uterus. This caducous preparation of the placenta, by the deposition of the salt of lime, is probably connected with the demand for ossific matter in the fœtus; but it must also remind you of the deposit of lime upon the egg of the bird, or of the silica in the stems of ripe fruit, to facilitate its separation from the parent tree; or we may compare it to the deposit of earthy salts in the lungs of old age, as preparatory to the death of the individual. It is pretty certain that, in some cases of abortion in the latter months, caused by the death of the fœtus, the death has depended on the low respiring power of the placenta, the placental development having progressed so rapidly as to render the organ prematurely deciduous."

Another indication of the necessity for this maturation is to be found in the difficulty with which uterine contractions are excited by the ergot of rye before the normal time for parturition has arrived. Perhaps the strongest proof, however, that the parturient contraction of the uterus is in some way dependent upon the condition of the placenta, is derived from the phenomena which have been described under the designation of *superfœtation*. In whatever way we explain these phenomena,—whether we regard the

two fœtuses as the products of two distinct conceptions,—or whether we regard them as twins, of which one is more advanced in its development than the other,—the facts remain the same; namely, that one child may be expelled by the parturient efforts of the uterus, whilst the other is detained; that the uterine contractions do not detach the placenta of the latter; but that pregnancy may continue for many weeks or even months longer, until the second child has attained its full term of development. In some of these cases it is positively affirmed that the first child presented every appearance of maturity; in others, it appears that an abnormal condition of the placenta was the cause of its detachment. In all, however, it is obvious that the retention of the second fœtus was consequent upon *its* immaturity; and we do not see how this could influence the uterine contractions, except through the condition of the placenta.

There is another most important indication, that the immediate cause of the supervention of labour is to be looked for in the condition of the attachment of the fœtus to its parent, rather than in ovarian excitement; namely, that preparatory changes are obviously taking place during the last fortnight, or thereabouts, of gestation. The uterus, as Dr. T. Smith himself tells us, begins to contract more closely upon its contents; and a disposition to relaxation in the soft parts surrounding the outlet of the pelvis manifests itself in the descent of the whole mass. We have no doubt that, during this period, a progressive change is taking place in the placental attachment; for such a change may be easily verified in the placenta of many of the lower animals (such as the cat), in which the fœtal and maternal portions remain more distinct than they do in the human female, these being separable from each other, as the period of parturition draws near, far more easily than at any previous time. And it is not difficult to understand that the completion of this change, involving (so to speak) the death of the entire placenta, shall be the immediate cause of the supervention of labour; just as we know that premature labour may result from the death or abnormal condition of the fœtus and of the fœtal portion of the placenta. This view affords us a rational explanation of the occurrence of uterine action in cases of extra-uterine fœtation, which is considered by Dr. T. Smith as clearly indicating that the exciting cause of labour is to be found elsewhere than in the uterus itself. For if the condition of the placental attachment furnish that cause, instead of the state of the ovary, it will do so equally, whether the placenta be attached to the lining of the uterus, or to that of the Fallopian tube, or to any other organ. As an additional indication that the exciting cause of labour has its place in the fœtal, rather than in the ovarian, connexions of the uterus, we may notice the fact, ascertained by Earl Spencer, that of 75 cows in calf by a particular bull, the average period was 288¼ days; none of these having gone less than 281 days, and two-fifths of them have exceeded 289 days. That the male parent could produce any modifying influence on the ovarian periodicities of the female, cannot be thought probable for a moment: but that he should influence the term of fœtal maturation, must be admitted to be not unlikely.

In order to avoid the possibility of misconception, we shall briefly recapitulate our positions, in such a form as to indicate what we believe to be the true view of the subject, and to point out the chief errors into which we consider that Dr. T. Smith has fallen.

1. The muscular action of the uterus we regard as essentially peristaltic and independent of nervous stimulation. We fully recognise, however, the fact that the induction of this action is *often* brought about by nervous agency; but we consider this agency as operating, not directly upon the entire muscular structure of the organ (as when a voluntary muscle is thrown into contraction), but indirectly, by exciting its peristaltic movements, as in the case of other organs composed like it of non-striated fibre, and receiving, like it, their nervous supply from the sympathetic system.

We altogether dissent from Dr. T. Smith's doctrine, that the parturient contractions of the uterus, when once established, and even its tonic contraction anterior to labour, are excito-motor; because adequate proof has been given that they are dependent upon nervous agency at all, as well as the evidence of experiment and pathological observation (so far as they extend), go to prove that they are not. Nevertheless, we would not deny that the parturient actions *may be* excited in the first instance by nervous agency; it being very obvious, from the phenomena of abortion, that causes originating at a distance, and not capable of acting in any other way than through the nervous system, may bring about these actions. That the uterus may be thus affected through the nervous system, has long been taught by physiologists and obstetricians: and Dr. T. Smith's chief movement, in supposed advance, is in referring the regular parturient actions of the uterus to this source.

2. Dr. T. Smith maintains that the exciting cause of parturition is to be found in the recurrence of the periodical excitement of the ovary; which continues during the entire period of gestation, giving a special tendency to abortion at each return; and which, at the eleventh recurrence, acts with such potency as to induce parturition. He assigns no other cause, however, why this eleventh recurrence should be so much more effectual than the rest, than that by this time there is a much greater aptitude to contractraction in the uterus itself, and a readiness to be thrown off on the part of the placenta. That this ovarian excitement, acting by reflection on the uterus through the spinal system of nerves,—the *ovarian* nerves being the *excitors*, and the *uterine* the *motors*,—is the exciting cause of normal parturition, is, we believe, an entirely original doctrine of Dr. T. Smith's; no others having advanced beyond the mention of the usual *coincidence* of the period of parturition with the eleventh ovarian nisus. From this doctrine, however, we feel, called upon to withhold our assent; because, in the first place, no adequate proof has been afforded by Dr. T. Smith, that the coincidence of the two phenomena is in any way essential; and because, secondly, a number of phenomena, altogether left out of view by him, afford a clear indication to our minds that the coincidence is not essential, the normal parturient actions of the uterus being entirely independent of the ovarian nisus. We do not deny that abortion may sometimes result from ovarian excitement; but we conceive that this has no special action, and that it is only one out of many causes that may produce the result where a predisposition to it exists.

3. In searching for the real exciting causes of parturition, we conceive that there is ample evidence, both from the analogy of similar phenomena in the lower mammalia, and from observation on the human subject, to justify the expectation that it will be found in the condition of the placental attachment; and we can see no reason why the changes in which maturation consists, and on which, according to Dr. T. Smith, the peculiar efficiency of the eleventh ovarian nisus depends, should not when completed, be themselves as potent in exciting the first uterine contractions, as he supposes the ovarian stimulus to be.

4. The parturient efforts of the uterus having gradually advanced the presenting part of the child into the vagina, the other expulsor muscles are called into action through the spinal system of nerves; the requisite stimulus being supplied, either by afferent nerves of the uterus itself, as first suggested by Dr. Carpenter, or by those of the walls of the parturient canal, against the several divisions of which the presenting part of the child successively presses, as maintained by Dr. T. Smith. We are inclined to regard the latter as the correct view of the source of the action; but if any merit be due to the idea of the local origin of the stimulus which excites the reflex action of the expulsors, it appears to us that it may be fairly claimed by the first-named author.

British and Foreign Medico-Chirurgical Review, July, 1849. p. 15

127.—ON THE INFLUENCE EXERTED BY THE PATERNAL UPON THE MATERNAL ORGANISM THROUGH THE MEDIUM OF THE FŒTUS IN UTERO.—By Dr. A. Harvey, Physician to the Aberdeen Royal Infirmary.

Instances are sufficiently common among the lower animals, where the offspring exhibit, more or less distinctly, over and beyond the characters of the male by which they were begotten, the peculiarities, also, of a male by which their mother had at some former period been impregnated,—or, as it has been otherwise expressed, where the peculiarities of a male animal that has once had fruitful intercourse with a female, are more or less distinctly recognised in the offspring of subsequent connexions of that female with other males. A young chestnut mare, seven-eighths Arabian, belonging to the Earl of Morton, was covered in 1815, by a quagga, which is a species of wild ass from Africa, and marked somewhat after the manner of the zebra. The mare was covered but once by the quagga; and after a pregnancy of eleven months and four days, gave birth to a hybrid which had distinct marks of the quagga, in the shape of its head, black bars on the legs and shoulders, &c. In 1817, 1818, and 1821, the same mare, (which had in the meantime passed into the possession of Sir Gore Ouseley), was covered by a very fine black Arabian horse, and produced, successively, three foals, all of which bore unequivocal marks of the quagga. Several other examples illustrative of the general fact above stated will presently be given.

Great difficulty has been felt by physiological writers in regard to the proper explanation of this kind of phenomena. They have been ascribed by some to a permanent impression made somehow by the semen of the first male on the genitals, and more paticularly on the ova, of the female: and by others to an abiding influence exerted by him on the imagination of the female and operating on her mind at the time of her connexion subsequently with other males, and perhaps during her pregnancy. But they seem to be regarded by most physiologists as inexplicable.

Very recently, in a paper published in the Aberdeen Journal, an intelligent veterinary surgeon, Mr. James M'Gillivray, of Huntly, has offered an explanation, which seems to me to be the true one. His theory is set forth in the following statements quoted from that paper:—"When a pure animal of any breed has been pregnant to an animal of a different breed, such pregnant animal is a cross ever after; *the purity of her blood being lost*, in consequence of her connection with the foreign animal; and again; If a cow, "say of the pure Aberdeenshire breed, is a calf to a bull of the short-horn breed (known as the Teeswater breed), in proportion as this calf partakes of the nature and physical characters of the bull, just in proportion will the *blood* of the cow become *contaminated*, and herself a cross, forever incapable of producing a pure calf of any breed." It is maintained, therefore, (Mr. M'Gillivray adds), that the great variety of non-descript animals to be met with are the result of the crossing system; the prevailing evil of which is, the admission of bulls of various breeds to the same cow, *whereby the blood is completely vitiated*.

[A consideration of this subject, says Dr. Harvey, suggests the following questions:]

1st. Whether, in the case of a woman who has been twice married, and borne children to both husbands, the children borne to the second husband ever, or generally, partake of the peculiarities of the first husband. 2nd. Whether, in a family of several children, the younger children rather than the elder, are disposed, *cæteris paribus*, to exhibit the characters of the father. 3rd. Whether a woman who has borne several children by the same husband, may not ultimately acquire some of the physical characters, or at least imbibe and manifest some of the morbid tendencies of the latter.

[In treating this subject, Dr. Harvey proceeds first to state what facts are known regarding it, both as to the lower animals, and as to the human species.]

As regards the brute creation:—Besides the instance already quoted of

the mare belonging to Lord Morton, there is another similar case recorded. A mare belonging to Sir Gore Ouseley, was covered by a Zebra, and gave birth to a striped hybrid. The year following, the same mare was covered by a thorough-bred horse, and the next succeeding year by another horse. Both the *foals* thus produced were striped, *i. e.*, partook of the characters of the zebra. And it is stated by Haller, and also by Becker that when a mare has had a *mule* by an ass, afterwards a *foal* by a horse, the foal exhibits traces of the ass.

In the foregoing cases, the mares were covered. in the first instance, by animals of a different species from themselves. But cases are recorded of mares covered in every instance by horses, but by different horses, on different occasions—where the offspring partook of the characters of the horse by which impregnation was first effected. Of this Mr. M. Gillivray gives two examples. Thus, in several foals, in the Royal stud at Hampton Court, got by the horse *Actæon*, there were unequivocal marks of the horse *Colonel*,—the dams of these foals were bred from by Colonel the previous year. Again, a colt, the property of the Earl of Suffield, got by *Laurel*, so resembled another horse, *Camel*. "that it was whispered, nay, even asserted at Newmarket, that he must have been got by Camel." It was ascertained however that the mother of the colt was covered, the previous year, by Camel.

It has often been observed, that a well-bred bitch, if she have been impregnated by a mongrel-dog, will not, although lined subsequently by a pure dog, bear thorough-bred puppies in the next two or three litters.

The like occurrence has been noticed in respect of the sow. A sow of the black and white breed (known as Mr. Western's breed) became pregnant by a boar of the wild breed, of a deep chestnut colour. The pigs produced were duly mixed, the colour of the boar being in some very predominant. The sow being afterwards put to a boar of the same breed with her own, some of the produce were observed to be stained or marked with the chestnut colour that prevailed in the former litter. And on a subsequent impregnation, the boar being still the same breed as the sow, some of the litter was also slightly marked with the chestnut colour. What adds to the value of the fact now stated is, that in the course of many year's observation, the breed in question was never known to produce progeny having the smallest tinge of the chestnut colour.

Breeders of cattle are familiar with analogous facts as occurring in the cow. A pure Aberdeenshire heifer was served with a pure Teeswater bull, to whom she had a *first-cross* calf. The following season the same cow was served with a pure Aberdeenshire bull; the produce was a *cross* calf, which at two years old had very long horns, the parents both hummel. A pure Aberdeenshire cow was served, in 1845, with a cross bull—*i. e.*, an animal produced between a first-cross cow and a pure Teeswater bull. To this bull she had a cross-calf. Next season she was served with a pure Aberdeenshire bull,—the calf was quite a *cross* in shape and colour.

Mr. M'Gillivray, after relating the whole of the foregoing examples, says: "Many more instances might be cited, did time permit. *Among cattle and horses they are of every day occurrence.*

[The facts bearing on this subject in connection with the human species are much fewer in number. It is obvious that decisive facts can only be obtained by observations of marriages between parents of different races,—Europeans and Negroes, for instance. Some such facts Dr. Harvey records. He says:]

My colleague, Dr. Dyce, tells me, that he has certainly known one instance (if not more) where a Creole woman bore fair children to a white man; and that the same woman had afterwards to a Creole man other children, who bore much resemblance to the white man, both in features and complexion.

The following additional cases illustrative of this question have recently been communicated to me: the first by my friend the Rev. Charles M'Com-

bie, of Tillyfour, minister of Lumphanan, in Aberdeenshire: the second by Professor Simpson, of Edinburgh :—

I. Mrs. ——, a neighbour of Mr. M'Combie, was twice married, and had issue by both husbands. The children of the first marriage were five in number; of the second, three. One of these three, a daughter, bears an unmistakeable resemblance to her mother's first husband. What makes the likeness the more discernible is, that there was the most marked difference, in their features and general appearance, between the two husbands.

2. A young woman, residing in Edinburgh, and born of white (Scottish) parents, but whose mother sometime previous to her marriage, had a natural (mulatto) child by a negro man-servant, in Edinburgh, exhibits distinct traces of the Negro. Dr. Simpson, whose patient the young woman at one time was, has had no recent opportunity of satisfying himself as to the precise extent to which the Negro character prevails in her features; but he recóllects being struck with the resemblance, and noticed particularly that the hair had the qualities characteristic of the Negro.

It is of more immediate interest, however, and of greater practical moment, to ascertain whether, through the medium of the fœtus, the husband may impart to his wife either the syphilitic virus, or the scrofulous diathesis, or any other constitutional morbid tendency (*e. g.* insanity) which he may possess. Facts are wanting on this subject: but it is not undeserving of patient inquiry.

Dr. George Oglivie, of this city, informs me of a case, which fell under his own observation, where a woman was twice married, and had children by both husbands, and where the children by both marriages were scrofulous, although only the first husband had marks of that diathesis; the woman herself, and her second husband, being to all appearance quite healthy.

[Another case was communicated to Dr. Harvey, by Professor Pirrie, of Aberdeen.]

Mrs. H——, apparently perfectly free from scrofula, married a man who died of phthisis. She had one child by him, which also died of phthisis. She next married a person who was to all appearance equally healthy as herself, and had two children by him, one of which died of phthisis, the other of tubercular mesenteric disease—having, at the same time scrofulous ulceration of the under extremity.

[Dr. Harvey proceeds to say, that, in these cases,]

Before the mother could have imparted the scrofulous taint to her offspring by the second husband, she must herself have imbibed it from her first husband through the medium of his offspring while in utero. And, although still seemingly free of the taint, it may have required only the appropriate external condition to call it into full activity in her own person. And, with regard to the syphilitic poison, there is no difficulty in understanding, and it is quite within the bonds of probability, that the fœtus, if contaminated with it by its father, may convey it to the mother. Messrs. Maunsell and Evanson, after mentioning that they have notes of the case of a syphilitic child, whose mother had been infected by a former husband (they do not say in what way)—and to all appearance cured five years before its birth—the father of the child (her second husband) being in good health, state that their experience would enable them to adduce many curious facts bearing on the communicatton of the syphilitic poison. Perhaps their experience might furnish an affirmative solution of the question at issue. It has been affirmed, indeed, that a man who has once had syphilis, but been seemingly cured of it for many years, may yet so retain the taint of it as to contaminate his offspring, without, at the same time, tainting his wife. Very possibly. But this does not prove that he may not contaminate his wife also; and the observation itself is in that respect fallacious, inasmuch as, in any given case of the kind, the wife may really have imbibed the virus, although in a latent form, and might subsequently give proof of the reality of the fact by tainting the offspring begotten by another and a per-

fectly healthy husband. Adopting this view, it may be found of importance, in contemplating marriage with a widow, to inquire into the constitutional peculiarities of her deceased husband!

[Dr. Harvey next discusses the theories which have been put forth in explanation of facts like these. He says,]

The first is that suggested by the great Haller, who ascribes it to a permanent impression made by the semen of the male on the genitals, and more particularly on the ova, of the female; the second, that suggested by Mr. M'Gillivray, who ascribes it to an influence exerted by the fœtus in utero on the constitution of the mother. The notion entertained by Sir Everard Home and others, that it is an affair of the imagination, seems too absurd to require serious consideration.

Mr. M'Gillivray's theory seems to me to meet the whole facts of the case, and to derive support from a great variety of facts in regard to the reception and constitutional effects of morbific poisons and morbid diatheses.

Mr. M'Gillivray, indeed, supposes that there is a *direct* vascular connexion between the fœtus in utero and its mother; and he seems to consider the validity of his theory to hinge on this assumption. The assumption, however, is untenable, nor is it at all necessary for the establishment of the theory.

[Dr. Harvey proceeds to say:]

In connexion with the constitutional influence exerted by the male through the medium of the fœtus in uteri, on the system of the female, another and a very singular question may be raised. In the case of an aboriginal woman of colour, does previous impregnation by an European male render the female incapable ever after of fruitful intercourse with a male of her own race?

This question is suggested by an observation, made in various parts of the world, by the excellent Count de Strzelecki, relative to the effect of fruitful intercourse between an aborginal female and an European male. "*Whenever such intercourse takes place,*" says the Count, "*the native female is found to lose the power of conception on a renewal of intercourse with the male of her own race, retaining only that of procreating with the white men.*"

This, if a general fact, contrasts remarkably with Dr. Simpson's case, above mentioned (one of fruitful connexion between a white man and a white woman, after previous impregnation of the latter by a black man), unless, indeed, this be, which probably it is not, an exception to an equally general fact of the same sort. It would limit, also,—nay, absolutely exclude, opportunities of observing whether children born of dark parents, where the mother formerly had issue by a European male, exhibit traces of the latter. But it was before stated, on the authority of two gentlemen long resident in Jamaica, that in our West India colonies—in Jamaica, at least—fruitful connexions of this kind are of common occurrence, and (which I mention at present as in keeping with this) on the authority of Dr. Dyce, that, in children born under such circumstances, marks of the European have been observed. Special inquiry, made recently, have served so far to confirm these statements, but not to satisfy me that the issue of such connexions is numerous.

The opportunities, however, enjoyed by the Count de Strzelecki, of making observations as to this point, in most parts of the new world, have been very great. "He has lived much (to use his own words) amongst different races of aborigines,—the natives of Canada, of the United States, of California, Mexico, the South American Republics, the Marquesas, Sandwich, and Society Islands, and those of New Zealand and Australia." And, referring to the statement made by him and already quoted, the Count observes—"*Hundreds of instances* of this extraordinary fact are on record in the writer's memoranda, *all recurring invariably under the same circumstances*, amongst the Hurons, Seminoles, Red Indians, Yakies, (Sinaloa), Mendosa Indians, Araucos, South Sea Islanders, and natives of New Zealand, New

South Wales, and Van Dieman's Land; and all tending to prove that the sterility of the female, which is relative only to one and not to another male, is not accidental, but follows laws as cogent, though as mysterious, as the rest of those connected with generation."

The alleged relative sterility of the native female, after intercourse with the European male, is brought forward (it may be added) by Strzelecki as affording an explanation, and as being the chief cause of the gradual diminution and ultimate extinction of the native tribes in most parts of the new world, which follow the introduction of the European races. "Wherever the white man has set his foot-mark, there the print of the native foot is obliterated; and as the tender plant withers beneath his tread, so withers the aboriginal inhabitant of the soil." And "human interference," says Strzelecki, "to avert this melancholy consequence has been hitherto of no avail; a charter for colonization granted to one race becomes virtually the decree for the extinction of the other." *Monthly Journal, Oct. 1849, p. 1130.*

128.—STERILITY.—By Dr. OLDHAM, Physician Accoucheur to Guy's Hospital.

[Dr. Oldham has many just objections to the meddlesome processes which have recently been adopted to remedy various displacements and functional or organic diseases of the womb. These he alludes to in the following observations:]

There are few cases which come before an obstetric practitioner which are so full of perplexity as those of sterility, especially where it is limited to those cases where the os and cervix, and body of the uterus, are free from any recognizable disease. Recent researches have afforded most valuable information on the composition of the male and female generative elements, and the physiology of generation; but our knowledge of the various causes by which impregnation is intercepted or prevented is very limited. One of these, no doubt, is any such partial or complete occlusion of the sexual canals as to prevent the transmission of the semen. Others are to be found in imperfectly developed ova within a shrunken ovary, or some defect in the semen, or a want of congruity between the two elements. These are subtle and concealed causes, difficult, and, with our present knowledge, almost impossible to detect, but of infinitely greater importance in their relation to primary sterility than the mechanical obstacles which have of late so exclusively engaged attention. It appears to me that the cases which justify the use of mechanical treatment require the greatest discrimination, not only on account of the facility with which they may be confounded with perfectly natural conditions, but also because these operations are not without danger. There is scarcely any amount of danger or pain that women will not go through to obtain the prospect of becoming mothers. They are notoriously credulous as to success, and are ready, and often the costly victims of empiricism; and I would venture to say that obstetricians ought to be nicely scrupulous in encouraging a plan of treatment of very doubtful efficacy, and dangerous to life. I cannot imagine a position more overwhelmingly distressing to any right-minded man than to have been the means of destroying the life of a woman in the endeavour to remove sterility. And yet I am sure that, in these operations, a hazard is run quite disproportioned to the amount of good accomplished; and I shall recount two fatal cases which have come to my knowledge: and I cannot but infer that others of a similar kind have occurred, but have not been recorded side by side with those of a more fortunate issue.

I feel great confidence in saying that a true congenital stricture of the os uteri, externum or internum, or of the Fallopian tubes, sufficient to prevent impregnation, is *very rarely* to be met with, and yet nothing is more easy, with the idea of a mechanical impediment in the mind, than to be self-persuaded into the belief that the natural orifice is too small. It is quite im-

possible to fix a standard size for the inlet to the womb. It has often happened to me to feel the virgin os uteri extremely small, and yet pregnancy to take place. The sound too, is a very insecure guide to the measurement of the os internum; and I think it is a most reprehensible practice to allow a neuralgic dysmenorrhœa, whose seat I believe is generally in the ovary, to be the indication for this meddlesome practice. The only cases, in my opinion, in which a mechanical dysmenorrhœa with sterility can be said to exist, are those in which the tissue of the cervix is large and firm, and the os uteri is diminutive in comparison with the size of this body: a small, almost imperceptible, round aperture, perforating a bulky cervix. When the tissue of the cervix is not so condensed, but has its normal yielding *feel*, I doubt altogether the propriety of regarding even a very small os uteri as a strictured one. I have myself successfully treated by dilatation some cases of the kind above cited, but they are *very few*, compared with the large number which come under my care.

1. I am indebted to my friend Dr. Golding Bird for the following instructive case. On April 7th 1849, I received from him the uterus and appendages of a lady who had died from peritonitis, excited by attempts to cure sterility by mechanical dilatation, whose history, as furnished to me by Dr. Bird, is as follows, and with whose concurrence I publish it:—

"A lady of dark complexion, aged 36; married several years, and never pregnant; resided in Jamaica. From youth she suffered intense dysmenorrhea, and always had pains during sexual intercourse. She was nervous hysterical, and excitable to the last degree, and was supposed to have suffered from every possible form of inflammation; these attacks obviously being neuralgic, so common in hysterical women. In June last by the advice of her physician in Jamaica, she came to London for the *express* purpose of having the os uteri dilated, which had already been attempted by wax dilators. The obstetric physician who was consulted in London, coincided in this opinion, and thought the sterility and dysmenorrhœa *depended* on a stricture of the os uteri. He divided the os uteri with a cutting instrument, and introduced silver dilators. This produced horrible suffering; and although at first she fancied the pains of menstruation were rather better, they soon became as bad as ever, and she did not experience the slightest relief. She left off the treatment for a time, but was soon again inclined to resume it; and silver canulæ were passed into the os, and left there. Again she suffered frightfully. On Saturday, March 31st, a gentleman, the assistant of the physician, passed in another tube, but the distress was *intolerable*; and sickness and shivering coming on, she urgently begged her sister to try and remove it, which she succeeded in doing. Getting worse a neighbouring surgeon was summoned, and he found her labouring under what he regarded as peritonitis marked by hysteria. She had scarcely any fever, collapse coming on almost immediately, and she continued sinking until Tuesday, when I (Dr. G Bird) was summoned to her. I found her at her sisters's residence at T——— Park, presenting almost the collapse of cholera; the pulse 200, and a mere thread; distended abdomen; vomiting of black *fluid*; intense irritability. All treatment was useless and she soon sunk. On examining the body, and raising the omentum, no appearance of disease of any kind was found above a line connecting the anterior superior spinous processes of the ilia. Below this line there was intense peritonitis; the convolutions of the intestines covered with butter-like lymph, and the *pelvis* filled with pus-like fluid; the right ovary and broad ligament covered with the same butter-like lymph, but so feebly adherent that it washed away by dipping it in water; the cavity of the uterus was filled with bloody *mucus*. There was no other disease.

The uterus and appendages examined by Dr. Oldham:

The uterus had been opened by a single oblique division of the anterior wall, directed from the cervix to the left angle of the womb. The uterus was larger than usual for the virgin; it was rounded on its anterior surface,

and a bulging convexity of the posterior wall, which, with the general softness of the tissue, showed it to have been the seat of recent engorgement.

The blood vessels over the entire surface of the uterus and appendages were injected with blood, especially the fimbriated extremity of the tubes, the ovaries, the broad and round ligaments. On the anterior surface of the body of the uterus were two small projecting fibrous tumours, the size of a large and small pea: the serous investment of them was highly vascular, the blood-vessels rising over them just like the calyx of the ovarium ovum of the bird. There was a similar more flattened growth in the posterior wall.

The divided surface of the anterior wall showed its proper structure to be much enlarged (it measured in the body eight lines); the muscular structure was soft, and the veins large: a probe easily ran through them. The length of the united cavities was two inches and ten lines, the canal of the cervix being one inch five lines. The mucous membrane of the cavity of the body was soft, slightly raised, and of a vermilion hue. Agitation in the water was sufficient to loosen and separate it.

At the os uteri internum there was a zone of highly-injected blood-vessels, broken only at one point: the circumference of this aperture was eight lines. The os externum had a clean, smooth edge without any break or mark of division; its circumference measured one inch one line. The cervix had its characteristic markings, and the glands were empty of mucus. On the right side of the divided cervix, which would have formed the front wall, the ribbings were stretched upwards, enlarging the mesh-like appearance; and towards the os internum some were lacerated transversely, and from this to the os externum the structure was more ragged than usual.

The right tube.—The extremity of this tube was almost entirely closed as a congenital formation, the aperture being very small. When opened, the fimbriated end showed its characteristic rich folds of mucous membrane, which were much injected, and were covered with bloody mucus. The remaining two-thirds of the tube was apparently healthy, not vascular, and pervious throughout.

The right ovary was almost covered with lymph, soft, and large. There was a cyst large enough to hold a small nut on the uterine end of the ovary. The stroma was gorged with blood. There was only one puckered Graafian follicle: the surface of the ovary was thick and corrugated.

The left ovary was irregular in its shape, a projecting mammillary portion coming out from its outer end This, on being cut into, was hard and vascular, like the commencement of malignant disease: the ovarian tunic was thick and wrinkled; the stroma vascular: a few remains of Graafian vesicles, with puckered tunics, and some clots of different colours, black and brownish.

The left tube vascular at its fimbriæ, healthy in its mucous membrane, and its canal pervious throughout. This tube passed into the uterus more directly than its fellow, which was more curved. The veins healthy; arteries healthy; the right round ligament large and vascular; vagina healthy.

It is unnecessary to comment at any length upon this case. It affords a most instructive example of the dangerous effects of dilatation, even in experienced hands, and the great caution with which it should be undertaken. It is important, too, as showing the difficulty of detecting the cause of sterility. I am sure that there was no kind of morbid contraction in this case, and that the os and cervix uteri, which were alone treated, had nothing whatever to do with the dysmenorrhœa or sterility. Both of these, no doubt, were dependent on the atrophy of the ovary; and the congenital obliteration of the end of the right tube would have been sufficient to exclude the corresponding ovary from any share in the function of reproduction.

II. Another presumed cause of sterility and dysmenorrhœa is, any deviation in the position of the uterus, and hence an indication for the cure of these disorders is to replace this organ, and hold it in its proper axis in the pelvis, by means of Dr. Simpson's uterine supporter. Dr. Rigby and others have related cases of this kind. It is not necessary for me to reiterate the

objections which I urged in the last number of the Reports upon this subject, but I cannot avoid relating the following case, which more than confirms my opinions of the dangers which may arise from this supporter. I am indebted to Mr. Bransby Cooper for this case, which, like the preceding one, ended fatally; and which he has given me his permission to publish.

A young married lady, of great personal attractions, was attended by Mr. Cooper, for a very painful fissure in the anus, which he divided and speedily cured. She then spoke to him of what had been to her a very distressing social trouble, namely, her sterility, which she associated with a perfect indifference to sexual intercourse. Mr. Cooper examined the sexual organs; but as he did not discover any defect which could be remedied by surgery, he referred her to a physician-accoucheur. This gentleman detected the uterus in a retroverted state, which he looked upon as the probable cause of the sterility. For the cure of this displacement, he introduced a uterine stem supporter, which set up peritonitis, of which she died in three days.

It is much to be lamented that the warning which such a case as this imperatively suggests should not have been published by the obstetric physician in whose practice it occurred. My own opinion is, that mere displacement forwards or backwards, if the uterus be not diseased, does not commonly cause sterility; and I cannot but characterize the practice of fixing the womb in a definite position by means of a stem supporter as rash and hazardous, causing severe irritation and pain, and even death to the patient, with, at the best, a very questionable amount of ultimate good. The anteversion or retroversion of a small uterus, without other complications, does not, in my experience, occasion any great distress; and it is far better to leave it alone, and improve its tissue with the rest of the organs of the body, than to prop it up for a time under the feeble pretence of curing it.

III. Dr. T. Smith's adventure of cauterising the Fallopian tubes I *know* of only from his papers. I have the instrument by me, but at present I have no intention of using it.

It may, perhaps, appear presumptuous to express an opinion without some experience concerning it; but the grounds on which it is sought to establish it as a practicable and useful operation appear to me to be in great measure hypothetical and insufficient. The operation itself is attended, of course, with the same danger of local irritation as the uterine sound, aggravated by the time necessary to perform it. The canula and probe may no doubt be passed, as a demonstration, to their respective distances in the sexual organs when these are healthy and removed from the body; but I feel persuaded that the difficulties of accomplishing it in the living body cannot well be exaggerated. The obstructions to the tube are principally of a solid kind—deposits of scrofulous matter, the girthing of false membranes, &c.: these, of course, cannot be overcome, neither can they be detected. From what facts the presence of mucus in the Fallopian tubes, sufficiently firm and thick to block up their canal, is inferred, I do *not* know. It has happened to me to examine carefully these tubes in a great many inspections, but I have never seen such a secretion. From what I have seen when the tube has been dilated, and its secretions retained, I should say that the mucus was thin and fluid, and very different from that of the cervix uteri, to which the term 'thick' may well be applied.

Again, I doubt very much if any probing, such as is contemplated by Dr. Smith, would remove a thick mucus, supposing even the mucus was there, and the probe could be passed. The only way in which such mucus could be dislodged would be by injecting the tubes, which would be dangerous, on account of the fluid escaping into the peritoneal cavity. Indeed the operation appears to me to be altogether indefensible, and, but for the *authority* of so good a name, it could hardly be rescued from the charge of extravagance. *Guy's Hospital Reports, Vol. VI., Part 2, Oct. 1849, p. 371.*

129.—USE OF IODINE IN CONGESTION AND EROSION OF THE CERVIX UTERI.—By Dr Churchill, Dublin.

The preparation Dr. Churchill employs is of the following strength:—

℞. Iodinii ʒj.; potassæ hydriodatis ʒij.; aquæ distillatæ ʒij.; spiritus vini ʒij.

and after four or five years's trial, he can truly say that he has found it the best application for congestion, erosion, or superficial ulceration of all that he has tried. Dr. Churchill usually commences with a single application of nitric acid, or the acid nitrate of mercury, and then, after a few days, he paints the entire cervix with the iodine. This must be repeated once or twice a week, but not oftener, for whenever he has attempted its more frequent use he has found the uterine irritation rather to increase than diminish; and this will probably explain why these trifling complaints take so long a time to cure. Dr. Churchill has seldom succeeded in less than two months if the congestion was considerable, and many cases have required a much longer time. The application occasions no pain at all, unless the orifice of the vagina should be touched by the caustic, which may happen if it be applied too profusely. In one case the patient complained of a metallic taste in her mouth, in five minutes or less after each operation. After one or two applications, the cervix will generally be found to have diminished in volume, to have lost its tenderness, and the eroded surface to have lessened in extent, and to have assumed a more healthy appearance. Dr. Churchill strongly recommends that the application of the iodine should not cease abruptly, but first be diminished in frequency, then left off, and resumed if, as is very common, any of the symptoms return.—*Medical Times*, May 14, 1849. *Monthly Retrospect, July*, 1849, *p.* 160.

130.—APPLICATION OF LEECHES TO THE OS AND CERVIX UTERI.—By W. Clegg, Esq., Boston.

[After remarking upon the difficulty there is in applying leeches to the os and cervix uteri, when the cervix is displaced through hypertrophy of the womb or relaxation of its ligaments, Mr. Clegg says:]

I have lately used a very simple instrument made for me by Mr. Wood, of York, which has answered admirably, and I therefore have much pleasure in describing its construction. An oval cup made of plated metal, very smooth externally, roughened internally, and about the size of a split walnut, so that it will easily pass through a speculum, contains the leeches. To this is attached a hollow stem, about nine inches long. The cup is covered by a lid, and to this lid a wire is attached which runs the whole length of the stem. The cup is passed through the speculum, and by reason of its extreme smoothness is rapidly slipped beneath the enlarged and prolapsed cervix so as to be closely applied to the os: then the wire is drawn, the lid slips back, and the leeches bite eagerly at the diseased surface. In one case, where the cervix dragged very heavily upon the rectum with considerable retroversion of the womb, I applied leeches *without* using the speculum, the cervix being too tender to allow of the least contact with that instrument. The leeches (four in number) laid hold warmly, and after filling themselves, which they did in half the usual time, found their way out of the vagina in the most orderly manner. *Med. Times, June* 2, 1849, *p.* 604.

131.—CASE OF FIBROUS TUMOUR OF THE UTERUS.—By Dr. E. Ballard, East Retford.

[The history of this case was almost unknown to Dr. Ballard. At the post-mortem examination of the body he found the peritoneal cavity to contain a large quantity of fluid, and to present the evidences of old and of re-

cent inflammatory action. Connected with the upper part of the uterus, and evidently formed in its fundus, was a tumour of the size of an adult's head, fibrous in its texture, and containing a cavity (quite distinct from the true uterine cavity), which communicated with the peritoneal sac, by a perforation through which the fluid had escaped into the peritoneum. The cervix uteri was found to have disappeared. Dr. Ballard makes the following observations on this case:

1. Fibrous tumours of the uterus are by no means uncommonly found after death in women who are carried off by all kinds of diseases. If small, and placed beneath the peritoneal surface, they may be productive of no inconvenience whatever, but if large, they may produce much local uneasiness; or by pressing on neighbouring organs, as the bladder or rectum, disorder their function, and impede more or less the evacuation of the urine or fæces. It is not common for them to prove fatal, but the above case exhibits one mode in which they may become so. I have already illustrated one change which fibrous tumours of the uterus undergo in process of time, namely, their condensation, and more or less perfect calcareous degeneration. This, also, is one of the changes to which tubercle is subject; but as this matter is capable of a process of softening, so, too, is the fibrous tumour. It was in this manner that the cavity which I have described became formed. Whether originally due to inflammation or not, (and I should be disposed to regard the latter as most probable), that process was evidently going on at the time of the patient's death, as evidenced by the large quantity of lymph which was discovered in the cavity. The disease had proved fatal by the extension of the softening process to the external surface, and perforation of the peritoneum.

2. Directing our attention to the peritoneum, it is observable that there appeared to have been no endeavour made at preventing the effusion of the contents of the morbid cavity by the formation of adhesions. Where perforation of the wall of the stomach succeeds as the result of a large ulceration of the mucous surface, it is common for adhesions to occur to a neighbouring organ; but in the instance before us, the cause of perforation was probably not an inflammatory one, the opening through the membrane taking place by gangrene, from defective vascular supply, the substance below it undergoing death. Perhaps, also, there was present some amount of liquid effusion in the peritoneum previous to the perforation. The peritoneal membrane exhibited indications of recent and of former inflammatory action, the latter in the firmly organized coating of lymph which covered most of the parietal peritoneum, and the former in the ascitic effusion, vascular discoloration, and recent lymph. The one was probably the result of irritation of the large solid tumour, the latter clearly due to the perforation. The large amount of effused fluid may be accounted for by the congestive character of the inflammation. It was remarkable that there was no suspicion either of perforation of the peritoneum, or of peritonitis, excited in the mind of the medical attendant by the symptoms presented by the patient; no sudden occurrence of pain induced by the former, and no local pain and tenderness to indicate the latter. The age of the patient will readily account for this, since the obtuseness of sensibility of advanced years tends to render latent inflammatory disorders, which, in a younger person, would exhibit themselves by marked nervous phenomena.

3. I desire lastly to draw attention to the disappearance of the cervix uteri in connection with a tumour of the fundus of the organ. I have already noticed a similar occurrence where the body was greatly enlarged by being the seat of hypertrophy, fibrous tumour, and cancerous growth. In these two instances it was plainly due to the changes the organ had undergone; in others, however, the cervix is only partially destroyed, from adhesions occurring between it and the neighbouring part of the vaginal wall.

(*Prov. Med. and Surg. Jour.* June 27, 1849, p. 345.

132.—UTERINE POLYPI.—By Dr. Lever. Physician-accoucheur to Guy's Hospital.

[In Guy's Hospital Reports, Vol. vi. Part 2, Dr. Lever has inserted several interesting cases of polypi which he fully describes. He then makes the following interesting remarks:]

Continually fretting the portion of the womb with which they come in contact, they produce central uneasiness, pains in the loins, groins, and thighs; give rise to a sub-acute or chronic inflammation of the neck of the uterus; enlargement of its special glands; sometimes hypertrophy, with induration; and in most instances superficial ulceration. The discharge is very like the decoction of quince-seed; and when ulceration is present, the glutinous discharge is usually mixed with one of a muco-purulent colour, and occasionally streaked with blood. Sometimes these growths co-exist with polypi of a fibro-cellular structure. Patients may have several of these polypi removed at different periods.

Both the married and the unmarried are, I believe, equally liable; and the patients not unfrequently continue for weeks or months under medical treatment, until tactile or visual examination discovers the *causa mali*. The treatment is simple—removal either by forceps or scissors; reduction of inflammation, if such be present, by local depletion; washing away discharge, and relief of pain by medicated injections; and the cure of superficial ulcerations by the occasional application of the arg. nit. These principles carried out will in every case, I believe, effect a cure.

I have frequently known polypus uteri lead to abortion. The age of the patient reported in one case was young, if we take into consideration the size of the growth, and its freedom from malignancy; although the tumour itself at the first view, impressed one with the idea of a malignant growth, yet, on close inspection, this was found to be due to ulceration, extensive, and in some places deep, which had formed on several portions of its base and sides; and from some of these ulcerations pale but coarse granulations were spreading. In the operation for the removal of the tumour, in one case, the single tube was employed; in another, the double canula; to both were applied the rack at the handle, which so much facilitates the tightening of the ligature. When I can use the single tube I prefer it, as it is not so likely to injure the patient if she should make any sudden move during sleep; neither is there the same necessity to keep her on her side as when the double canula is employed. In all cases where the canula is employed for the removal of polypi the bladder should be closely watched, as I have known much pain and unnecessary fear occasioned by its distension being overlooked.

When these morbid growths are noosed, it is better to use the largest whip-cord that can travel through the canula, and not to tie the tumour at first too tightly for the structure of the mass is prone to lacerate, and copious bleeding might ensue. Further, it is better to lighten the ligature every other day, instead of daily, as is the practice in the treatment of firm and non-malignant polypi. Again, if there be much hemorrhage at the time of operation, it will be a wise precaution to use the tampon, confining this by a compress placed over the vulva, and keeping all in position by means of the T. bandage. I need hardly add, that the bladder demands constant watching. I prefer the plan of removing these tumours by ligature, if such can be accomplished, to the application of pure nitric acid or the use of the nitrate of silver. If the former be employed, due care must be taken not to touch the vagina, as fatal peritonitis has been known in some instances to ensue. *Guy's Hospital Reports, Vol. VI, Oct. 1849, p. 209.*

133.—CASE OF SUCCESSFUL EXTIRPATION OF THE UTERUS.—By Dr. C. H. Higgins, Corresponding Member of the Edinburgh Obstetric Society.

[Dr. Higgins' patient was a maid servant, 17 years of age, who was un-

married and had never been pregnant. The catamenia had appeared for the first time about six months previously, the discharge lasting three or four days. At the next period the discharge was very profuse, and she attended for about three months at the Taunton and Somerset Hospital, as an out patient, for menorrhagia. At the end of that time the sanguineous discharge ceased to be constant, but during its intervals she had a fœtid leucorrhœal discharge. The further progress of the case is thus stated:]

By her own account she continued in this improved condition, capable of attending to the duties of her situation, until about three weeks since. At this time, however, (early part of April, 1843), she experienced a most severe menstrual period, attended with very violent and continuous bearing down pains in the natural situation of the womb, and in the back; which, from her description, clearly resembled those that characterise the expulsive efforts of the uterus during the latter stage of labour. These, according to her, tremendous pains, persisted for some hours, and then suddenly ceased and she immediately discovered a large substance filling up the vagina, and projecting beyond the labia. She suffered greatly from dragging pain, and in the course of a day or two a considerable fœtid sanguineous discharge came on, and she became too ill and depressed for her menial duties. She was now seen by the usual medical attendant of the family—under whose care she remained for some days, and at his suggestion, she was at length sent into the hospital, and placed under my care on the 20th of April, 1843.

I saw the patient, for the first time, on the day of her reception, and found her with a countenance expressive of great depression and suffering. The pulse very low, but quiet and regular. The usual excretions were said to be performed naturally, and her appetite was tolerably good. She chiefly complained of unceasing pain of a *dragging* character at the lower part of the abdomen and back, and consequent complete loss of rest. Upon examination, in the presence of two or three of my colleagues, there was found, occupying the vagina, and protruding beyond the external genital fissure, an irregularly shaped mass, about the size of an adult human heart, and consisting of two distinct, but connected portions. A firm fleshy substance of pyramidal form, covered at its base by a nodular fungoid-looking insensible growth of a spongy consistence—somewhat resembling the cauliflower excrescence of Dr. Joseph Clarke.

The growth, here and there, presented a broken down and ulcerated appearance, giving out a copious fœtid and bloody discharge. Upon more closely investigating the nature of the connection which existed between these two apparently dissimilar portions of the tumour, a firm tough pedicile, half an inch in diameter, and somewhat less than this in length, was perceived to arise from the centre of the former body, and to lose itself in the other mass; of which mass the greater portion merely overlaid its more solid neighbour, as if it had been flattened and pressed out upon it.

The opinion formed of the case at this stage of the examination, was that a double fibrous polypus had been generated in the cavity of the uterus, and extruded by a sort of slow labour, at a menstrual period, when the womb would be more disposed to take on such an excited action; and that the more distant half of the tumour had become decomposed and broken down by exposure to the air and friction. In order, however, to arrive at a more precise diagnosis of the case, I proposed to remove the looser and broken portion at once, as it was clear that the true nature of the ailment could only be determined by a more intimate examination of the solid part of the mass, which was at present obscured to a considerable extent by the other. It was easily lifted up and scraped away with the handle of a scalpel, until the pedicle was reached. This being of a firm fibrous structure, required to be divided. The whole being in this way got rid of, the now denuded fleshy body was seen to be an uniform reddish, pyramidal substance, somewhat flattened from before backwards, about the size of a turkey's egg, firm to the touch, very sensitive, and having its narrow end high up in the vagina.

The surface was roughish, and bathed in a fœtid bloody secretion, with here and there a slight abrasion, within the area of which might be seen traces of fibres, resembling muscular fibre. Upon making a vaginal examination, I discovered, instead of a dilated os and cervix uteri, as was anticipated, at about three or four inches up the passage, a complete *cul de sac*, and immediately below this, a prominent ridge or thickening, encircling the apex of the tumour. These unlooked for signs, taken in conjunction with the roughness of the surface, presenting so marked a contrast to the usually smooth and almost polished appearance of a polypus, and the absence of everything like a uterine mass above the pubis, together with the history of the case, satisfied me that we had to deal with something more serious than was at first conjectured. That, however, unlikely *a priori*, the case was in fact one of those rare instances in which a polypus connected by a short pedicle with the internal fundus of the uterus had been suddenly expelled, and, dragging down with itself the organ, had caused it to undergo complete inversion; and that the broken-down mass, which I had removed in the early part of my examination, was indeed the polypus—the original cause of all this mischief; and, which, as far as one could judge from its present condition, was of about the same size as the displaced uterus.

Some doubts, however, of the correctness of my opinion being expressed by those around me, from the improbability of such an occurrence, as inversion from polypus in a person of the youth and character of my patient, she being a virgin, as well as from the extreme difficulty of accurately distinguishing between inversion and polypus. I proposed to search for the originally *internal* orifices of the Fallopian tubes, which, if my judgment of the case were correct, should be found on the surface of the tumour. These I was fortunate enough to hit upon, and having inserted into each of them a common bristle to the depth of two or three inches. I succeeded in gaining over my less hasty colleagues to my own view of the case.

During these various and long-continued manipulations, from which the patient appeared to suffer very little, about six or seven ounces of blood were lost, but chiefly during the removal of the polypoid mass.

[For some time afterwards, the patient was kept in the recumbent posture, and appropriate local and constitutional treatment adopted; but, the exposed fundus uteri assumed an inflamed and excoriated condition, and the patient's health began to fail so rapidly that it was determined, as the only resource, to extirpate the womb. Dr. Higgins thus describes the operation:]

The patient, having been previously prepared by a small dose of oil over night, and an enema early on the following morning, was brought into the theatre on the 5th of May, 1843, and placed in the position adopted for lithotomy (but without being tied.) The labia being held aside by two of my colleagues, and traction downwards and outwards made on the uterus, I passed, by means of a double canula, or rather a modification of this instrument, the two parts of which could be separated or brought together at will, a tape band half an inch wide, as high up on the inverted portion of the vagina as possible, both as a precaution against hemorrhage, and also to give me a command over the divided vagina afterwards; and having tightened this band somewhat, I excised, with a common scalpel, guarded to within an inch of its extremity, the entire uterus, close to the tape band, and through the portion of the vagina immediately beyond the cervix. The excision was easily accomplished, and could not have occupied many seconds, and there was scarcely any hemorrhage. A double-bladed speculum being now introduced into the vagina, I passed three silk sutures through the entire substance of this part, at some little distance from its cut edge, on two opposite sides, and brought it into accurate apposition, as I should have done in an ordinary excised wound, so as to procure, if possible, adhesion by "the first intention," an anticipation in which I was not ultimately disappointed. I now ventured to slacken the tape band slightly,

but a flow of blood instantly taking place, I retightened it, and at once arrested it. Having satisfied myself that the band was not applied so tightly as to endanger sloughing, in fact, that it was acting simply as a tourniquet, I left it there, fastening the projecting end of the double canula against one of the thighs; and having filled up the vagina with a sponge moistened in cold water, the patient was replaced in bed. She bore the operation well, but subsequently complained sadly of the pain and distress it had cost her. When visited soon after the operation she was extremely depressed, and appeared to suffer greatly from abdominal and lumbar pains—for which she was ordered a full dose of laudanum in some wine, and perfect quiet enjoined.

[The subsequent treatment of the case it is unnecessary here to detail. The following is the report given by Dr. Higgins. for]

May 11th.—Much improved in all respects. The appetite becoming natural. From this date the patient continued steadily, and without drawback, to gain strength; and at the end of two months left the hospital quite restored to health, and free from discharge. The vagina appeared about three inches long, and was closed by a complete cul de sac—a small ridge or line of cicatrix running through its middle. The wound of the vagina had completely healed at the end of a week.

I have had frequent opportunities of seeing and examining my poor patient since her removal from the hospital. On the 19th of February, 1844, she came to see me, having walked a distance of three miles in about an hour; she was not at all fatigued, and she intended walking back again. She stated that she was, and had been, quite well, and should not, from her own feelings, know that anything unusual had occurred in her, except that she did not menstruate. She was very cheerful, and grateful for her recovery. On the 29th of July I again saw her; she was looking exceedingly well and cheerful. She told me she had never experienced the slightest discomfort, except periodical pains in the loins once a month, which lasted two or three days; but she had never had any sort of discharge, which could be regarded as vicarious menstruation. I have frequently seen her during the last three years. The last time I did so was at a friend's house, where she was living in the capacity of nurse-maid. This was in May or June 1848, five years from the date of the operation; and she was quite well, and had never ailed in the slighest degree. She stated that she had not experienced the periodical lumbar pains so often of late.

[In commenting upon this singular case, Dr. Higgiugs first refers to the extreme youth of the patient; who is the youngest person affected with polypus uteri, of whom he has found any record. Next, speaking of inversion of the womb as a consequence of polypus, Dr. H. refers to several cases of partial inversion. He then proceeds to say:]

Of the *complete* inversion of the womb from polypus, in addition to the instance which fell under my own notice, I have met with the record of three cases—one given by Van Sauden, and quoted at length by Dr. Crosse; a second, given by the late Dr. D. D. Davis, in his "Principles of Obstetric Medicine," Vol. I.; and a third by Dr. Fleetwood Churchill, in his admirable work "On the Principal Diseases of Females," second edition, page 317, which he saw in the Jervis Street Hospital, Dublin, under the joint care of Dr. Montgomery and Mr. Lynch.

Dr. Churchill refers to a similar case, related by Dr. Browne, in the "Dublin Journal;" but as I have not the opportunity of consulting this periodical, I must content myself with referring to it on Dr. C.'s authority. I believe, that a due comparison of these cases with mine, will show that mine was not the least remarkable example of the malady, either as to its history, or the subsequent consequences to the subject of it.

The diagnosis of inversio uteri has been pronounced a difficult matter, where it is partial or slight in degree, and even when complete, it is liable to be confounded with polypus. I would venture to suggest, that the signs

usually given as diagnostic of inversion, are incomplete and unsatisfactory without the plan that I adopted, of searching for the orifices of the Fallopian tubes, and inserting bristles into them, a proceeding to which I was led in consequence of doubts being expressed as to the nature of my case, after I had ascertained the existence of all the usual marks of the accident. Where it is successful, the proceeding I suggest must unquestionably remove all doubts on the subject. At the same time, I would caution the reader from regarding a want of success in his search for the Fallopian orifice as a negative proof of the non-existence of inversion; but I am disposed to regard the proceeding as not very difficult, or requiring any great amount of dexterity.

It has been questioned by some, whether extirpation of the womb is a justifiable proceeding; but, I believe, the objectors to this, no doubt, most serious operation, have been induced to pronounce their veto, from an almost exclusive examination of the proceeding in connexion with malignant degeneration of the organ. In this class of cases, it doubtless appears a questionable undertaking, not only from the almost invariable want of success which has been recorded, but also from the growing impression in the profession, that the tendency to malignant disease, when once it has been pronounced, is rarely to be eradicated from the system. When the subject of extirpation of the womb for inversion is examined *apart* from such malignant fault in the organ of the system, there appears to me no reasonable objection to the operation, formidable as it assuredly is. The numerous instances of the successful issue of such cases, to be found in various treatises and journals, justify this opinion; and, as Dr. Churchill says, (op. cit., page 232)—"There is abundance of evidence to show that life may be preserved after the loss of the womb." "Rousset relates a case, where the uterus was destroyed by gangrene, and the patient recovered; and Rousset, Primrose, Radford, and Cooke, have given cases in which the uterus appears to have sloughed off without compromising the patient's life."

Having decided upon the propriety of the operation, it was a question with me whether I should adopt the ordinary plan of removal by ligature, or deviate so far as to employ excision of the organ previously strangulated by a silk ligature, as recommended by Dr. Davis and Mr. Windsor, for at first I did not contemplate any deviation from the prescribed methods. But reflecting on the probable sources of danger in the operation of extirpation, it appeared to me that *hemorrhage* was the only one to be really apprehended, and I began to debate how far this might be prevented without subjecting my patient, already worn down by pain and discharge, to all the usual distressing and depressing symptoms attendant upon the application of a ligature, with the apparition of peritonitis in the back-ground. Believing that I could accomplish this object by means of a broad tape band in lieu of the ordinary ligature, so applied as to act as a mere tourniquet, and which could be readily slackened, or even altogether withdrawn, when the risk of hemorrhage had ceased, and which, from its flattened surface and width, would not lead to the strangulation of the part around which it was placed, I was induced to depart, in the way already detailed, from the operative methods hitherto employed. In addition to the comparative immunity from pain and constitutional fever, in my case, I would suggest whether the more rapid and satisfactory recovery of the patient were not in a great degree promoted by my tourniquet ligature keeping the divided parts generally not only in close opposition, but in bringing and maintaining similar textures on the opposite sides of the wound against each other, and by permitting the employment of sutures to preserve their close apposition undisturbed. How far I was justified in my reasoning, or in subjecting my patient to a proceeding unsanctioned by precedent, or in my hope of inducing union of the divided vagina by the first intention, by means of sutures, I must leave to the decision of others, earnestly but humbly sug-

gesting a candid consideration of my operation, and a fair comparison of the *progress* of my case, *after the extirpation*, with that of those in which removal of the womb has been accomplished by means of a strangulating ligature. *Monthly Journal, July, 1849, p. 889.*

134.—USE OF OXIDE OF SILVER IN MENORRHAGIA.—By Dr. J. J. Thweatt.

[Dr. Thweatt states that over certain forms of menorrhagia, oxide of silver exerts the same power that quinine exerts over intermittent, or mercury over syphilis. He says:]

The oxide of silver is best adapted to those forms of menorrhagia which depend on an undue excitation of the uterine organs, unaccompanied with high inflammatory action. Cases often present themselves where profuse hemorrhage makes its appearance at the usual menstrual period, or immediately after it has passed; in these cases there is an extraordinary excitation of the nervous system. The oxide of silver here often acts like a charm: calms the perturbation of the nervous system, and arrests the hemorrhage by its astringent qualities. It should be given in large doses, and repeated at short intervals until some effect is apparent. Women after parturition are frequently troubled with a sanguineous discharge, distinct from the lochia, which it is difficult to remove by the usual remedies. The oxide of silver is an infallible remedy for this pathological condition.

There is one form of menorrhagia often met with, which often baffles the skill and experience of the ablest practitioners to remove; and I know of no form of disease which tries more the patience of both patient and physician. A remedy, therefore, in which any reliance can be put, is certainly a desideratum. I refer to the too frequent occurrence of the menses. The quantity of the discharge is sometimes larger and sometimes smaller than it naturally should be; the intervals are short, and, in many instances, the patients are never entirely free from some discharge; exhaustion and debility are the usual accompaniments of this morbid condition; impoverishment of the blood followed by a cachectic condition of the general system; the nervous system is deeply involved; palpitations of the heart become a great annoyance. There is likewise a general depression of the moral faculties; the digestive organs are ultimately implicated, and there is dyspepsia in its multifarious forms,—gastralgia, pyrosis, &c., &c. Spinal irritation is of frequent occurrence; the patient complains during the short intervals, (when there are any) of dull pains in the pelvic region, with the sensation of weight or a bearing down motion in the uterus.

The oxide of silver is the only remedy in which any confidence can be placed to remove these symptoms. I have, under these circumstances, employed in vain the various preparations of iron and lead, together with the mineral acids; they afforded only temporary relief; but in every case in which I prescribed the oxide of silver, its action has been satisfactory.

I am aware that it is the opinion of those medical gentlemen who have experimented with this medicine, that it is inferior to the preparations of iron in those cases where the hæmorrhagic tendency depends upon a general anemic condition of the system. This is the opinion of Dr. Lane; it is with all due deference to such high authority, that I express a contrary opinion. In this form of menorrhagia the true indication to be met, is the arrest of the abnormal secretion; this drainage of the general system. If we can accomplish this (under all circumstances) desirable object, we shall have paved the way for the use of the ferruginous preparations, and the carrying out beneficially the proper hygenic regulations for the restoration of the health of our patient.

My experience with the oxide of silver induces me to believe that its main action is upon the capillary circulation, and particularly upon the uterine capillary system; that its powers are specifically directed to ute-

rine system. Its operation upon the nervous system is that of a mild and irritating tonic.

It is almost superfluous to state that this medicine is entirely nugatory, if not prejudicial, in those cases of menorrhagia which depend upon organic lesions. It never should be prescribed in cases of high inflammatory action; until after the subjugation of the inflammatory symptoms by antiphlogistic means, when it may be administered with great benefit.

I am in the habit of prescribing this medicine in larger doses than usual. The only pathological effects I have witnessed from its use, in two grain doses, two or three times a day, were uneasiness in the lower bowels, sometimes attended with slight tormina and tenesmus. The symptoms were easily removed by an anodyne enema. They often, however, require no attention on the part of the physician. The usual dose, when intended to be continued for any length of time, is half a grain to one grain, twice or three time a day, according to circumstances: it should always be combined with a small quantity of opium or morphia. The oxide of silver blackens the stools, *American Jour. of Medical Sciences, July*, 1849, *p.* 69.

135.—NEW REMEDY FOR LEUCORRHŒA.

In the *Boston Medical and Surgical Journal*, Dr. Braman states that for nine years he has been in the habit of using preparations of helonias diœca (unicorn plant) as a remedial agent. He considers it particularly applicable in such affections as have their origin in atony of the generative organs of both sexes,—but particularly the female. "In leucorrhœa," he says, "I consider it invaluable. I use it with a confidence I *attach to no other medicine* Under its influence the patient, whose life has been almost a burden, soon revives. Her uncomfortable sensations vanish, and ultimately, an entire recovery of health and strength is established." It may be given in the form of powder, tincture, or syrup; but the latter is the most eligible. The doses which Dr. Braman recommends, are of the powder, one drachm and a half; of the tincture, one fluid drachm; of the syrup, three fluid drachms. These doses are to be taken thrice a day, half an hour before the ordinary meals; and according to the urgency of the case, the quantity administered may be increased, if the patient bear it well. In irritable stomachs, nausea is sometimes produced; and when this occurs, the dose must be diminished.

[No formula is given for the preparation of the syrup or tincture.]

London Jour., Oct. 1849, *p.* 962.

136.—PELVIC CELLULITIS.—By Dr. Lever, Physician-accoucheur to Guy's Hospital.

[After detailing several interesting cases of this description, which are too often overlooked by practitioners, Dr. Lever remarks:]

Pelvic cellulitis, in the majority of instances, is not due to any mismanagement or neglect on the part of the peurperal attendant, It may follow abortion, and labour, either premature or at full term. It will be found to come on after preternatural, complex, or flooding delivery; it sometimes arises after labours terminated artificially, whether by the hand or by instruments, and sometimes it is very prevalent during an epidemic puerperal fever. The child born may be small or large; but where there is a want of proportion between the child's head and the pelvis, and where such labours are lingering, or are terminated artificially, multiplied observations have convinced me that that part of the pelvis affected will be found to correspond with the position of the fœtal occiput. Patients of the strumous are more susceptible than those of a contrary diathesis. The symptoms usually supervene on the second or third day after delivery; in some instances they come on actively, in other cases insidiously; quickness of pulse and anx-

iety of countenance being the most constant attendants. In all cases the secretion of milk is small; the lochia diminished: in some the one is absent, the other arrested. Pain, moreover, is a constant symptom, at first, confined to the part inflamed; but as the disease advances, and the inflammatory products are effused, the pain is increased, and the patient will point out with anatomical accuracy the course of the nerves upon which the trespass is committed. In some cases the disease is very marked, the patient even going out at the end of the month; but still, if strict inquiry be made, it will be found that she has not felt so well as after previous confinements, and that on one side or the other there have been pain and a want of power in the lower extremity. My experience leads me to believe that the left side of the pelvis is much more frequently affected than the right; and it will be conceded that the occiput of the fœtus is more frequently directed to that side. The decubitus of these patients is most marked; they lie on the back or on the sound side, with the thighs flexed, with the affected extremity resting for support on the sound limb and rotated inwards, giving the observer the idea of diseased hip joint; this is most markedly shown in the cases above related. This disease terminates either in resolution, suppuration, or absorption of the inflammatory deposit; the former is rarely seen in hospital patients, the second is not uncommon. The abscess may present or open externally, or it may burst internally. Where pus was discharged into the vagina, it will sometimes open into neighbouring viscera. The matter in some cases is found to burrow deep into the pelvis, and the bone may become diseased, but after suppuration has taken place, and the pus has become evacuated, and the abscess has closed, there will be considerable induration, in the removal of which, time and improvement of health are the two great remedies. Induration is perhaps by far the most common result of pelvic cellulitis.

These cases, when admitted into the hospital, rarely demand or admit any active treatment. I have never seen one where general depletion was called for or needed. Local depletion, repeated from time to time, according to the activity of the disease and the strength of the patient's constitution; warm poultices, simple or medicated; tepid anodyne injections carefully thrown into the vagina; attention to the state of the bowels, which are prone to irregularity, at one time constipated, at another relaxed; the use of mild mercurials, until the gums become slightly affected, and maintaining this with gentleness, are, in my belief, the best means of treating the disease. At the same time the diet must be bland and nutritious, and the powers of the patient must be supported. When it is evident that suppuration has taken place, I am an advocate for evacuating the pus, as soon as it can be done with certainty and safety. The diet must be improved; porter, wine, &c., given with a free but prudent hand; while bark, quinine, and the mineral acids will aid in the recovery of the patient. To promote the absorption of the induration which follows suppuration, or to quicken the external progress of the pus, I place great faith in the employment of blisters. Absorption is still further promoted by pot. iodid., administered in some bitter infusion or in sarsaparilla.

Guy's Hospital Reports, Vol. VI. Oct. 1849, p. 219.

137.—TREATMENT OF PELVIC ABSCESS.—By Dr. E. J. Tilt, Physician to the Farringdon General Dispensary.

[In speaking of the treatment of pelvic abscess, arising from ovarian inflammation or other causes, Dr. Tilt speaks first of incision through the vagina, which he considers to be in many cases a safe and proper mode of evacuating the abscess. Proceeding then to speak of opening the abscess by the skin, he says]

If fluctuation is not perceived in the vagina or in the rectum, but, on the contrary, is found in the hypogastric region, then the aperture must be

made in that part of the abdomen towards which the tumour points. It would be highly imprudent to open the abscess without having effected an adhesion between the cyst and the abdominal walls, as we can never be sure that such has taken place.

Several plans may be adopted for this purpose, all borrowed from the treatment successfully employed in the cure of abscess of the liver; but that most generally made use of was first carried into effect by Professor Recamier, and consists in determining the adhesion of the two peritonæal surface by the application of Vienna paste, (potassa fusa cum calce,) previously to puncturing the cyst through the eschar.

The treatment successfully made use of by Drs Graves and Begin, in abscesses of the liver, might also be adopted in this instance. Dr. Graves makes an incision of a portion only of the thickness of the abdominal parietes, and then applies linseed-meal poultices over the incision, and the pus almost always finds an exit where the walls of the tumours have been so divided. When an opening is once formed, it is important that the free issue of the matter be maintained. As this plan has been so successful in the cases alluded to, why should it not be equally so in those pelvic abscesses which point towards the skin? We know not, however. if this plan has received the sanction of experience.

Dr. Begin's mode of treating abscesses of the liver is similar to the preceding, inasmuch as he cuts down on the tumour until he reaches the peritonæum, but without dividing it. He then dresses the wound; and a few days after, when, as the result of inflammation, the parietal peritonæum became adherent to that portion of the membrane which covers the abscess, he punctures it, and thus gives issue to the pus. This plan of treatment might also be advantageously employed; but we have seen most of that adopted by Professor Recamier, and we generally make use of it.

Having decided in what part of the abdomen it is most desirable to effect an opening, a certain quantity of Vienna paste (potassa fusa cum calce, made into a paste with alcohol,) is applied to the skin; and when the thickness of the parietes requires more than one application of the caustic, it is better only to remove the central portion of the eschar, leaving the outward portion to protect the cuticle from the action of the caustic. When the seat of fluctuation is nearly reached by the caustic, and when adhesions have evidently taken place, from the impossibility of the abdominal parietes sliding over the tumour, then an incision is made in the centre of the eschar. Injections of tepid water should be made into the abscess, to remove fœtid secretions, and to impede the ingress of air, by keeping the abscess full of liquid. *Lancet, June* 16, 1849, *p.* 636.

128.—UTERINE DISTURBANCE DURING THE CLIMACTERIC PERIOD.—By G. Corfe, Esq., M.D., Middlesex Hospital.

There is no organ in the female economy that so readily partakes of disturbance from uterine irregularities as the liver; and the instances are not few where protracted menorrhagia has resisted astringents, quinine, and the ordinary treatment, while it has yielded to brisk and frequent purgation, with small intermediate doses of calomel, &c. In such cases the uterus takes on the action of the liver, and so long as the latter viscus is allowed to remain in its torpid condition, so long also will the uterus continue to pour out an undue quantity, or an altered quality of dark venous fluid, and the patient becomes enfeebled, harassed, and distressed; hæmorrhoids are not unfrequently induced also. But no sooner, oft times, do the remedies tell upon the hepatic branches of the portal system of the liver than the intestinal portion of the same system becomes relieved from its congested state, and the uterine discharge is shortly subdued.

It is from such observations that my mind was originally led out into the study of some painful attacks of the nervous system, connected with the

climacteric period, and I can confidently assert, that a very large number of women, who would have been treated ten years ago with frequent bloodletting, and other antiphlogistic remedies, have been perfectly convalescent from a totally opposite method. The stomach, liver, and kidneys, appear to be the principal organs which suffer from derangement, and, in order to restore to the former viscus its healthy tone and vigour, scrupulous attention must be paid to the diet. Veal, pork, salt meats, fried and broiled fish, vegetables, except potatoes, tea, pastry, and made dishes, or ragouts, wine, bottled beer, or any liquor containing a free acid, or gaseous matter, appear to aggravate the disorder in a marked degree. Mutton roast and boiled, fish, poultry, fresh game, cocoa nuts boiled, or coffee, not too strong, and draught porter, is the most agreeable diet for such a stomach; but the benefit derived from taking six or twelve fresh oysters without any other food, or additions, as pepper, vinegar, &c., or even bread, upon an empty stomach, as for luncheon, for instance, has been most remarkable in some severe cases which I have witnessed. Their alkalescent character has removed the morbid acidity of the stomach, whilst it has restored its tone and vigour, and the following draught has been ordered to be taken every morning on rising:

℞. Ammoniæ hydrochloratis grs. x.; extra. taravaci, 3ss.; dec. aloes comp.; mist. gent. comp. aa, 3v.; sodæ pat. tartratis 3i.; tr. lavandulæ com. mxx. Fiat haustus.

If this aperient should not prove of sufficient activity, it must be repeated in the middle of the day; but, on the other hand, if it is too active, the draught may be only taken every other or every third morning, yet it is of greater importance that the alimentary canal should be freely acted upon once or more daily, than that it should be allowed to continue in a torpid condition.

The alvine evacuations are usually offensive, fetid, and so dark, that I have known them to partake of the character of the motions of a patient with melœna for several days together, and I am inclined to think that it is from the fact that practitioners do so rarely submit these excretions to ocular examination, that many cases of this disorder are misunderstood, and therefore mismanaged.

Another useful remedy is to clothe the loins with the emplastrum opii, (Ph. Lond.) or else with a long strip of new flannel: and, in order to assist the liver in its healthy functions, a warm bath and occasional friction over the skin with sand-soap or a horse-hair glove usually promotes the healthy action of the abdominal viscera.

Whenever the urine ceases to deposit lithates, and becomes a pale canary colour, and the evacuations from the bowels present a healthy appearance, and cease to emit a penetrating fetor, there is a co-existing amelioration in the sufferings of the patient. Her spirits are more buoyant, her mind less distressed, her appetite more even, and her whole frame less weary. *Med. Times, April 7, 1849, p. 451.*

139.—CLIMACTERIC DISEASE IN WOMEN.—By Dr. W. Tyler Smith.

[Dr. Smith remarks that the climacteric disease which occurs in women at the decline of the catamenia, is to be treated with reference 1st, to the cerebral symptoms; 2nd, to the ovario-uterine disorder; and 3rd, to the general hyperæsthesia. The principal point in the treatment of *the cerebral symptoms*, or rather in the prevention of the seizures, consists in the avoidance of all excitement of mind or body, and the removal of all *sources of* irritation. In very rare cases, when there is much cerebral congestion, leeches or cupping may be required. As to the *ovario-uterine disorder*, Dr. Smith remarks:]

The treatment of the ovaria and uterus is the most important point, in the management of the female climacteric. The cerebral symptoms are

only the *results*, while the conditions of the sexual organs are the *causes* of the more remote maladies. Any disorder of the uterus or ovaria, beyond that actually incident to the catamenial change, should be carefully treated. Irritation or abrasion of the os uteri, or displacement of the womb, or congestive enlargement of the organ, increases the severity of the constitutional symptoms. The most natural and effective remedy for all the uterine disturbances of this period, is moderate depletion from the *labia uteri*. The blood may be drawn by incisions into the os uteri, just as in scarification of the gums. I have often used a gum lancet with great good effect. Or if the depletion is required to be more considerable, three or four leeches should be applied, by the aid of the speculum to the os uteri. Leeches draw blood more suddenly from the vascular os uteri than from any other part of the body to which they are commonly applied, and often produce prompt and immense relief,—all the relief, in fact, of the catamenial secretion, without any of its inconveniences. The suddenness with which leeches applied to this part fill themselves, considerably increases the good effects of their application, and for some hours after their removal there is an oozing of blood from the leech-bites. Even in cases where hemorrhagic symptoms accompany the change of life, the application of leeches before the coming on of each uterine flow diminishes the menorrhagia, by diminishing the uterine congestion. Occasional local depletion, besides its importance to the climacteric disorder, tends more than anything else which can be devised, to prevent the structural diseases which frequently set in or exacerbate at this epoch. The efforts of uterine depletion in mitigating the most distressing head symptoms, is often almost marvellous. This form of depletion ought to be resorted to from time to time, during the change of life, according to the extent of the uterine congestion, in all women who suffer materially from this alteration of constitution. We often see indications of the treatment which is required in sanguineous effusion from vaginal or rectal varices, or from hemorrhoidal tumours, or even from the stomach and lungs. It is of course still better if the depletion be made from the uterus itself. The effect of uterine depletion is not confined to the uterus but extends to the other parts of the sexual system, the Fallopian tubes, the ovaria, and even the mammæ. Occasional uterine depletion appears to me to be of the first consequence, not only as a method of cure, but as a means of preventing organic disease of the uterine organs, and of those organs affected by the uterine synergies. Many of these disorders, occurring at the change of life, appear to be aberrations of the formative power which, during the whole reproductive era, has expended itself upon ovulation, gestation, and lactation; but which, being now turned from these physiological processes, takes a pathological direction, and runs into disease. Thus then local depletion is of still more importance as a palliative and preventive of uterine and other diseases of this period, than as a means of removing more remote symptoms. In treating diseases of the reproductive organs, the special reproductive power inherent in these organs, and manifested even in their diseases, should never be lost sight of.

The local application of cold is an important auxiliary to depletion, at the female climacteric. Cold hip baths, or douche baths to the loins, cold water injections into the rectum, the injection of cold water, or iced water, or the introduction of small pieces of ice, into the vagina, are the modes in which cold can be best be applied. Injections of any other kind than of simple or iced water, generally produce irritation at this period; and sometimes the vagina is so irritable, that even cold water will not be borne. In cases where occasional returns of the catamenia assume a hemorrhagic or dysmenorrhagic form, warm and anodyne injections, both into the rectum and vagina, are useful, acting as fomentations. Warm water and laudanum, or the infusion of poppy heads with laudanum added, allay uterine pain and excitement. When menorrhagia with relaxation is the prevailing symptom, strong alum baths; (I use the formula recommended

by Dr. Ashwell, viz. ℥xvi. of alum to each gallon of water; the temperature to be at 98 degrees); in the intervals between the menstrual discharges, tend to repress the profuse uterine secretion, and to remove the relaxation of the uterine and vaginal tissues.

Care must be taken to avoid rectal irritation, as any excitement of the lower bowel is sure to be participated in by the uterus. The bowels should be kept in a lax state by cooling aperients, or enemata; but drastics, and particularly aloes, should be avoided. The habitual use of aloes, either as a purgative or dinner pill, has seemed to me to increase the uterine disturbance of the change of life, when this period arrives. The management of the bowels at this time is often a difficult matter, as the lower bowel participates in the uterine habit, and is at one time irritable and at another confined. To give aloes as an aperient at this period is mischievous; it is still worse to give it as an emmenagogue. All emmenagogue remedies are as distinctly contra-indicated at this epoch as during pregnancy. They are certain to produce mischief. But although the uterine secretion is not to be stimulated, the other important secretions—hepatic, renal, alvine, and cutaneous,—ought to be carefully regulated and kept in full play, to compensate for the important secretion which is about to become extinguished.

The General Hyperæsthesia.—The Hyperæsthesia and the peculiar æsthetic paroxysms, to the study of which it has been my main object to draw attention, without doubt depend upon the erethism, or excitability of the nervous system, induced by the irritable condition of the uterine organs, and upon the partial suppression of the catamenial secretion.

All the treatment which has been mentioned contributes to the relief of the hyperæsthetic symptoms. I would, however, insist upon the importance of regulating the diet of persons undergoing the catamenial change. From the tendency to plethora and *embonpoint* at this period, a light, nutritious, but not full, diet, with little wine, and no malt liquors, should be prescribed. Owing to the distressing sensations common to this time, small quantities of spirits are sometimes ordered, and are always gladly taken by patients. There is often a diseased craving for stimulants at this time, which, in several instances, I have seen pass into a decided habit of spirit drinking. Spirits ought only to be allowed with the greatest caution at this time of the constitution, as their good is only temporary, while their permanent influence is most mischievous. I know of nothing equal to moderate doses of sulphuric ether and valerian, for the relief of the distressing hyperæsthesia, and also of the paroxysms, when these are slight. They often act like a charm in soothing the sensations of the surface of the body; and, given as medicine, they beget no such habit as the permission to take small quantities of spirits frequently does. In the climacteric state of the female constitution, sulphuric ether is a more decided sedative than either morphia, the preparations of opium, or even hyoscyamus. In the height of the hyperæsthesia, an ether draught will often procure sleep when the brain refuses to be soothed by narcotics. Throughout the whole period of the change great attention should be paid to the skin. The clothing should be carefully attended to, and, during winter, flannel jackets and drawers should be worn. Tepid bathing, with subsequent friction, are of great use in diminishing the excessive sensibility of the skin.

London Journal, July, 1849, p. 601.

140.—CASE OF OVARIAN DISEASE. By Dr. G. Kennion, Harrogate.

[The patient, a lady twenty-one years old, had received a kick in the right iliac region, between four and five years previously, a few months after which a tumour appeared in that situation. Leeches were applied occasionally, iodine ointment rubbed upon the part, and hydriodate of potash given internally. Under this treatment the tumour was apparently removed, and she became quite well, except that the catamenia were sup-

pressed. She continued in this state for nearly four years, when the catamenia reappeared (scantily) three times at regular intervals, and she then perceived a return of the swelling. It rapidly increased in size, and produced such oppression of the breathing, that tapping was resorted to. Only three pints of fluid, however, came away, and she died in a few days afterwards. Dr. Kennion thus describes the post-mortem appearances:]

On opening the abdomen a few ounces of straw-coloured fluid escaped from the peritoneal sac. The whole abdominal cavity was filled with an enormous congeries of cysts, (hydatid?) the coats of which were so exceedi gly thin that they could scarcely be touched without breaking. The size of these cysts varied from that of a filbert to the size of an orange; the fluid which they contained varied in colour and consistence, the larger number containing a similar fluid to that which had been removed by paracentesis.

Th' effect of this rapidly-increasing disease had been to push upwards the whole of the abdominal viscera to such an extent, that the caput cœcum coli, doubled upon the ascending colon, occupied the right hypochondriac region; the upper margin of the liver was as high as the third rib, and the lower margin not lower than the fifth rib; while upon the left side, the stomach immensely distended with flatus, encroached still more upon the cavity of the chest. On removing as well as we could the diseased mass, it was found to be connected entirely with the right ovary and broad ligament, those parts on the left side being perfectly healthy. The right broad ligament was studded with growths of a very firm cerebriform character and appearance, from the size of a pea to that of a walnut: some of these were very highly injected, others were pale, and contained an embryo cyst, their growths being *external* to the cyst.

There are some interesting and instructive features in this case, which, however, are so evident that they scarcely require notice. The origin of the disease, four years ago, from a violent blow;—this blow followed in six months by encysted dropsy of the ovary;—the temporary removal of this disease by iodine;—the apparent quiescence of the disease during the lapse of so long a period;—the suppression of the catamenia during this period;—its reappearance in October, and almost simultaneously with this reappearance, the lighting up afresh of this malignant disease, which ran its course so rapidly. All these are points interesting in a pathological point of view. Another point which is worthy of notice in the diagnosis of the case, was the apparently *unilocular* character of the cyst, whereas, in fact, the disease consisted of many hundreds of cysts. Both Mr. Babington and I were deceived upon this point, and the only way in which I can explain the illusion, is by supposing that, in consequence of the extreme thinness of the walls of the cysts there was little or no resistance to the extension of the fluctuation from one cyst to the other.

Prov. Med. and Surg. Jour., July, 11, 1849, p. 377.

141.—CASE OF OVARIAN TUMOUR CONTAINING TEETH AND HAIR.—By W. Clapp, Esq., House-Surgeon to the Exeter Hospital.

[The patient was an unmarried woman, fifty-eight years of age, who had had a tumour in the abdomen, presumed to be ovarian, for twenty-eight years. The swelling having latterly increased very rapidly, so that respiration was impeded by the distension of the abdomen and pressure on the diaphragm, she was tapped, and about seven quarts of serum withdrawn. She died forty-eight hours afterwards, with symptoms of exhaustion and peritonitis. Mr. Clapp gives the following account of the post-mortem examination:]

On opening the cavity of the abdomen a large quantity of effused fluid escaped; the peritoneum was found to be intensely inflamed and covered with recent lymph, and occupying the whole extent of the abdominal cavity

was an immense tumour, which, arising from the right ovary by a narrow neck of about two-thirds the size of one's wrist, bulged out to double that size, and, again slightly contracting, immediately increased to the dimensions described, pushing upwards the stomach, liver, and diaphragm, and pressing the intestines backwards. It was firmly united by old adhesions on its upper and anterior surface to the omentum, and slightly so by recently effused lymph to the peritoneum lining the abdominal muscles. Its surface was of a dark purple colour, except in patches where it was thickened and white through former deposits of lymph: some of these were of considerable size, others smaller; and numbers of the size of millet-seeds existed on the intestines and other viscera of the abdomen. The tumour, on being removed, proved to be a cyst varying in thickness in parts, but generally about that of a shilling: its contents consisted of teeth, hair, bony deposit, some transparent masses of a cellular structure (as examined by the microscope), serum, sebaceous matter, and granular fat; which were contained in numerons small cysts. Teeth were found in all parts of the tumour, and were counted to the number of forty-three: some were contained in cysts; others imbedded in the semi-transparent masses, and two or three were growing from the walls of the parent cyst. In one part a few were imbedded in a mass of bone, bearing a strong resemblance to an upper jaw ununited in the mesial line.

The teeth consisted of molars, canine, and incisors, but in some parts two or three were united together, and one bore no resemblance to a human tooth. The bony deposit existed for the most part in small irregular portions and plates, without any definite form. The teeth and hair were examined by the microscope, and presented the normal appearance, except that the bulbs of the latter were imperfect. The sebaceous matter melted on the application of heat, and partially dissolved in ether. The uterus was of the size of a small pear, and with the left ovarium and its appendages, of healthy appearance. *Med. Gaz. Aug.* 17. 1849, *p.* 282.

142.—ACCOUNT OF A NEW PESSARY.—By Dr. C. Ritchie, Glasgow.

The uterine truss, when complete, consists of a frame, an abdominal belt, and certain narrow slips of India-rubber, attached to the belt and to the frame, by which the latter is kept in its proper situation in any position and state of the respiration. The frame consists of gutta percha, and of a slender wire of tempered steel, which runs enclosed within the slightly curved vaginal stalk, from the elastic pessary at its uterine end, to the lower part of the upright hypogastric plate in front, and along the centre of each limb of each part of this for a couple of inches, when its ends are made to unite within a narrow cross band.

This frame may require slight modifications, in individual cases, as to the length of the vaginal stalk, the breadth of the pessary, and the breadth also of that part of the upright or hypogastric plate in front, which rests on the vestibule or nymphæ. It is possible, also, that the angle at which the pessary is placed with the vaginal stalk may sometimes require some variations; but I have found several modifications of the instrument suit equally well in the same case. This is to be ascribed to the flexibility of the instrument, by which it accommodates itself readily to existing circumstances.

In constructing this insrument, I limited myself to obtaining the needful support to the uterus consistently with what would not dilate the parts by its size, occasion pain by its hardness, or excite uneasiness by its weight, and I have thus necessarily got into the same general arrangement as to its shape with Dr. Simpson in his instrument. It will at once be obvious, however, that the principle on which the present truss supports the uterus is different from that of Dr. Simpson's. The pessary part of the frame is a very elastic oblong air-cushion, made of thin highly-polished gutta percha,

and may be made to rise at about an angle of 65 from the vaginal stalk, and, when the instrument is applied, to rest nearly parallel with the plane of the outlet of the pelvis, in apposition with the anterior aspect of the cervix and anterior labium of the uterus, thus pressing this organ, while it also supports it, in a direction backward and upward. The pessary can be attached to the vaginal stalk at a more acute angle, as in that represented in the wood-cut, in which it rises from the slightly curved vaginal stalk at an angle of about 45; and when in situ, and the woman in a standing position, its upper surface is nearly parallel with the plane of the brim, and the orifice of the uterus rests upon its centre.*

The shape of this pessary is otherwise very convenient, as one extremity of it, oiled, can readily, from its size and form, be passed through the narrowest sphincter, whilst the configuration of the vaginal stalk and hypogastric plate is such that when the former is fully introduced, even by the least intelligent patient, the pessary must necessarily be in accurate apposition to the uterus.

The small diameter of the vaginal stalk, its elasticity and at the same time its strength, and the lightness and suppleness of the hypogastric plate, have recommended themselves much to my patients.

I have said that the instrument is worn with an abdominal belt, to which it is attached by narrow tapes of India-rubber. The kind of abdominal belt may be allowed to vary, according to the wishes or wants of the patient. Some women, from the weight of the viscera of the abdomen on the uterus require a regular abdominal supporter, others may do with a band, three or four inches broad, of vulcanised caoutchouc. The smell of this latter is objected to by some, and its excess in elasticity by others, in which event cotton, linen, or flannel may be substituted.

The mode of attachment of the vaginal frame to this belt also differs in different cases. When a perfect abdominal supporter is worn, two slips of vulcanised India-rubber, each about a quarter inch in breadth, are sewed to the belt behind, corresponding in situation to each side of the coccyx. These are brought forward along the corresponding sides of the perineum, and made to cross beneath the transverse band on the front of the lower part of the hypogastric plate, which corresponds with the symphysis of the pubis, and their ends are then carried round the lower part of the trunk, and secured. Another pair of common or India-rubber tapes may next be attached to the upper corners of the hypogastric plate, and also carried round the body and tied. The lower edge of the abdominal belt covering the hypogastrium should then be brought down upon the front of the upright frame of the instrument in the vagina, and if necessary this edge of the bandage and the corresponding part behind may be kept secure by means of two additional India-rubber tapes passing along the perineum from one to the other.

When a simple band around the belly is all that is worn, it will be requisite, in addition to the tapes from behind, which are fixed, as in the former case, to the lower and upper angles of the upright hypogastric plate of the instrument, that the upper edge of this be enclosed either in a duplication of the lower edge of the abdominal band, if made of caoutchouc, or in that of a vertical two-inch broad piece of this material, attached by its upper edge to the band around the abdomen.

When either of these methods of affixing the uterine truss is employed, the vaginal portion of it is kept secure and comfortable in any position. The urine is evacuated without inconvenience, as are also the catamenia; and should either the edges of the abdominal supporter or of the perineal bands gall the skin, the evil is obviated at once by covering them with chamois leather.

* The gutta-percha frames are made by Mr. Paterson of this place; and may be had of Mr. Hilliard here, or of Messrs. Hilliard & Son, Edinburgh. The price taken for them is four or five shillings. Mr. Paterson is well known as a scientific anatomical modeller.

The only other means of treatment I employ are—attention to prevent a loaded state of the bowels, and a regular use of the cold-water sitting-bath. This latter I employ at first at a temperature of 70 degrees, and for a few minutes only; afterwards, and in mild weather, I recommend the bath to be of a lower temperature, and to be used for half an hour.

Monthly Journal, July, 1849, p. 588.

143.—USE OF CHLOROFORM IN MIDWIFERY.—By Dr. J. Denham, Ex-Assistant Physician to the Dublin Lying-in Hospital.

[The subjects to whom chloroform was administered by Dr. Denham, were generally healthy persons: some of the labours were natural, others tedious, or preternatural. Dr. D. says:]

When a patient in labour is first brought under the influence of chloroform, it will generally be found that the pains are diminished in force, frequency, and duration. After some time they generally regain much of what they had lost, and though apparently weaker, they yet seem to tell with equal or even better effect upon the progress of the labour. The muscles of animal life are first affected, and if a complete state of anæsthesia be induced, the action of the uterus is also impaired. If the chloroform be suspended for a short time, both sets of muscles soon regain their usual power. The effect upon the sensorium is very variable; some pass rapidly into a state of insensibility, while others become boisterous and difficult to manage; but in all who can be induced to use it sufficiently long, it appears to mitigate the feeling of pain, to modify the impression, or remove the recollection of it. The pupils remain natural during the first or excitable stage, but when anæsthesia is finally induced, they almost invariably become dilated. Of its effects upon the os uteri I cannot speak very confidently, as we seldom gave it in the first stage of labour; so far as I have seen, however, I believe it does not retard, but rather tends to promote dilatation of it. That the vagina and os externum become relaxed there cannot be a doubt. We did not remark the perinæum to yield more in proportion than the other soft parts. In no case did we witness injury to the child, even in the remotest degree.

I must say that I have never met with a single untoward circumstance affecting the health or life of either mother or child, that would in the slightest degree deter me from giving it where I thought it desirable or necessary. I have never witnessed any of the dreadful evils described by some writers as consequent upon its use; I have never seen the blood blackened, or the brain poisoned; nor has it ever, in my hands, induced convulsions, partial paralysis, or other still more formidable consequences; and until it does I will consider myself justified in still further investigating the subject, ever bearing in mind the maxim of Lord Bacon, that the labours of all who think, ought to be to multiply human enjoyment and to mitigate human suffering; and that, for this purpose, we must observe, and reason only from what we see.

We have yet to give the result of our experience in preternatural, instrumental, and complex labours; and this part of the subject I approach with much more of pleasurable feeling, because that here I anticipate no difference of opinion, nor will we require either eloquence to adorn argument or to enforce the practical points to be elucidated; the mere recital of the cases will, I am sure, carry conviction to every candid mind.

Preternatural Labours.—Preternatural presentations of the upper extremities are at all times dangerous, as they call for a difficult and hazardous operation, involving, perhaps, the life of both mother and child: an operation which the most experienced practitioner undertakes with no small degree of anxiety, deeply impressed, as he must be, with the responsibility thrown upon him at such a time. It requires judgment and skill to know how to conduct such a case, when to interfere and when to remain passive; and he who

undertakes it requires a clear head and a steady hand. How sad the fate of a patient in such circumstances who falls into the hands of a bold, untaught practitioner, who, ignorant of the dangers by which he is surrounded, and unmindful of the sacred charge committed to his trust, blindly rushes on to his own disgrace and the ruin of his hapless victim. How should we rejoice in the prospect of any remedy calculated to lighten the difficulties and lessen the dangers by which every such case is surrounded. Such an agent I believe chloroform to be; for if there is one operation more than another, in the whole range of midwifery, in which it is highly useful, it is that of turning; and if the discoverer of it accomplished nothing more, he has by this alone conferred a great benefit upon mankind, and largely earned the gratitude of his profession.

[After giving a series of cases of turning, in which chloroform was very successfully used, Dr. Denham says]

Such is our experience of chloroform in cases of turning; and so completely is the master of the hospital impressed with the value of it, that he administers it before turning as regularly as he should employ the perforator before extracting with the crotchet.

[On the subject of crotchet cases, Dr. Denham says]

On these cases in which delivery was effected by the crotchet, while the women were in a state of anæstyesia, we have scarcely a remark to make. The necessity for using it is not so great as in forceps cases, neither, perhaps, are the advantages so obvious, as the operation can generally be performed without much pain to the patient, and, in careful hands, with a very small amount of danger; at the same time, when we take into account the mental anxiety inseparable from such an occasion, and when we reflect how injurious any shock, mental or bodily, may then prove, I feel assured that we will seldom err in using chloroform, and that in the great majority of such cases it will be found a valuable adjunct in rendering the patient more manageable and the operation more easily performed, independent of any advantage it may possess with reference to ultimate recovery. In two of the crotchet cases, the patients were attacked with puerperal fever, one of whom died in hospital, and the other was forcibly removed by her friends.

In none of these cases had we hemorrhage to contend with, nor did any untoward symptom arise, either at the time of the operation or subsequently, that could be ascribed to the chloroform. There is one other point that I would here wish to direct attention to, namely, the giving of ergot with chloroform. In some of the cases this practice was adopted, and in one or two with marked effect, as it produced a decided increase in the pains, though not sufficient to complete the labour. The same practice was adopted in other cases, not now under consideration, with the best results; and in no case did it seem to do harm. Combining ergot of rye with chloroform may, therefore, be considered both safe and judicious where circumstances call for it.*

[Dr. Denham next relates a series of forceps cases in which chloroform was given: he then remarks]

I have given a rapid outline of all the forceps cases in which chloroform was administered, and not only were the operations facilitated, but the sufferings of the patients greatly diminished, by its use; whilst the recoveries on the whole were above the average in such cases. In the two first-mentioned cases, either from the chloroform not being good (its purity being a most important point to attend to), or from our want of experience in the mode of administering it at the time, the patients were not got into a state of perfect anæsthesia before the operation; we therefore experienced considerable difficulty from their restless opposition while in a state of semi-insensibility. In one of the twin cases there was an attack of hemorrhage

* Since this paper was read before the Obstetric Society, Professor Beatty confirmed the value of the practice by reading some cases of a similar nature to the Society.

after the expulsion of the placenta; but this I do not think could be ascribed to the chloroform. In the other twin case there was great difficulty in bringing down the head of the first child, a footling, and there was a considerable interval between the birth of that and the second. Was the chloroform the cause of this delay? Doubtless in some cases the pains are diminished in frequency and force, and may even be completely put a stop to during the state of anæsthesia, but they generally return with increased vigour as soon as the state of insensibility passes away.

[Lastly, Dr. Denham relates a series of cases of puerperal convulsions, in which chloroform was given in the intervals between the fits. He then proceeds to say:]

These cases, I think, do not afford any evidence that chloroform is calculated to bring on convulsions, nor that it will increase the number or add to the severity of the fits when they have already set in. Our experience is as yet too limited to enable us to decide upon this point; but, with our present amount of knowledge, we would neither recommend it as a preventive or a cure for puerperal convulsions. If there was no organic disease present, nor any determination to the head in the intervals, we would not fear to administer it where circumstances seemed to indicate its use, or when called upon to perform the operation of turning, or delivery by instruments in a case complicated with convulsions.

From what I have seen of chloroform, I do not think that its use should be so restricted as Dr. Montgomery, in his valuable paper lately published in this Journal, would have us believe; nor have I witnessed the fearful results so graphically described by him as likely to follow from its use. Whilst I admit that some of the advocates for chloroform have been too lavish of their praise; on the other hand, I think that those opposed to it have been too unsparing in their censure. A middle course will be found the safest.

I consider it an agent powerful for good in many cases, yet in rash and inexperienced hands it may, and I fear often does, prove equally powerful for evil. That it may be and sometimes is given for the purpose of amusing patients, and making them believe that they are saved from a vast amount of pain, when in reality they have scarcely inhaled a single breath of it, I doubt not. If we give it fairly and honestly, we must be prepared to spend a much longer portion of time with our patients than we do at present, or intrust them while in a state of anæsthesia, to the care of others during our absence. How any one in extensive practice can give up the time necessary for this plan of treatment I am at a loss to know, and yet some of our first and best accoucheurs boast that they use it in every case.

This report, I conceive, will bear us out in drawing the following conclusions:—

First. That chloroform is a most valuable agent in all turning, forceps, and crotchet-cases. Secondly. In some cases of natural or difficult labour it is useful in relieving pain, and in relaxing the soft parts, and thereby advancing the labour. Thirdly, if given in large quantities, or if persevered in too long, it puts a stop to all muscular action. This is contrary to the opinion of Dubois, who states that it never destroys the uterine contractions, or those of the abdominal muscles. Fourthly. In such cases the pains generally return with increased force when the chloroform is discontinued. Fifthly. It does not relax the perineum more than the ether soft parts. Dubois states that it does. Sixthly. When organic disease does not contra-indicate its use, there is little danger to be apprehended from it in midwifery practice. Seventhly. Chloroform may be administered to such a degree as not to take away reason and consciousness, and yet to secure the patient immunity from pain.

The mode of administering it in the hospital is by means of a hollow cone formed out of a piece of spongio-piline sufficiently large to cover the mouth and nostrils; to prevent it from collapsing, a few ribs of whale-bone

are fastened on the outside, and over these there is a covering of fine leather. This method is both simple and efficient, as proved by our almost uniform success in producing the desired effect with a much smaller quantity of chloroform than is generally used.* Professor Simpson says, that usually when the handkerchief is used, about an ounce per hour is necessary; some require less and some more In one case lately, a first pregnancy, he states that he expended nearly six ounces in two hours. In the Dublin Lying-in-Hospital we rarely use more than one ounce in that length of time, and very generally less.

Dublin Quarterly Journal, Aug. 1849, p. 109.

144.—INFLUENCE OF CHLOROFORM ON UTERINE CONTRACTION.—By Dr. TYLER SMITH.

[Dr. Smith makes the following observations on the influence of chloroform upon the physiological contractions of the uterus:]

On rendering a guinea-pig insensible by the use of chloroform, the first things observed were, quickened respiratory movements, and convulsive actions of the limbs. The limbs were also forcibly retracted by reflex action, when pinched or irritated, notwithstanding the insensibility. Everything showed that the first effect of chloroform was to exalt the function of the spinal marrow. But, after a short time, the respiratory movements became languid, and the only parts which moved were the nostrils, larynx, and diaphragm, at considerable intervals. The sphincters of the rectum and bladder were relaxed. The animal was now perfectly quiet under external irritation, no reflex movements being excited. The abdomen was now laid open, the heart might be seen to beat: the peristaltic action of the intestines was excited by the stimulus of the air, or by the point of a needle; and the peristaltic contraction of the uterus was readily produced by irritation. These facts demonstrated that the organs, partly or wholly, under the influence of the ganglionic system, including the uterus, continued active after the reduction of the spinal function to a low point. Another experiment showed that chloroform had the power of destroying the functions of the spinal marrow even more rapidly than hydrocyanic acid. The animal being poisoned by chloroform, a stilet was passed into the vertebral canal, and the spinal marrow destroyed. At the destruction of the spinal marrow, no movements whatever of the limbs occurred. Under ordinary circumstances such a laceration of the spinal marrow would excite the most powerful contraction of the extremities.

It was remarkable that, after this, a motor nerve being irritated, energetic muscular contraction was excited, so that the power in the nerves remained. Still, at the time when the functions of the spinal marrow, both reflex and direct, were thus destroyed, the uterus contracted under stimulus, after the occurrence of spinal death. These facts proved that the spinal marrow was affected by chloroform in the manner he had described. But, lest it should be supposed that the spinal functions ceased, not in consequence of chloroform, but from death itself, or the approach of death, he had repeated the experiment on the frog, in which it was well known that the reflex actions continued energetic for a considerable time after death. The frog being destroyed by chloroform, the reflex actions entirely and immediately ceased,

* At the conclusion of Dr. Denham's report, Dr. Flemming exhibited and described an apparatus which he had constructed for the purpose of administering chloroform, and which he had used most extensively for some months past. This consists of a small capsule of glass, with an overlapping edge. The capsule is circular, and about two inches and a half in diameter. Within it is placed a small slice of sponge, which, when the apparatus is about to be made use of, is saturated with chloroform; and this he styles "the chloroform sponge." Round the neck of the glass a large cup-like sponge, hollowed out, and so shaped as to cover the nose and mouth, is attached. Through the pores of this sponge the atmospheric air is is admitted. Before use both sponges are damped with water, and then the proper measure of chloroform is poured upon the small flat sponge contained within the capsule.

the limbs remaining perfectly quiet under stimulation. The head of the animal being removed, a needle was passed down the spinal canal, and no movements occurred; but when the needle reached the lower part of the spine, the limbs contracted from irritation of the origin of the nerves. In a very short time, however, the power of the nerves ceased, even under the stimulus of galvanism, and the direct galvanic irritation of the muscles themselves caused very slight muscular contractions to take place. To apply these experimental facts to the condition of the parturient woman under chloroform: the first effect of chloroform upon the uterine action appeared to be stimulant; afterwards, the spinal functions diminished in activity, and the uterus was left in great measure to be emptied by the peristaltic action of the organ. Another point worthy of observation—namely, the occurrence of relaxation in the sphincteric orifices, the vegina, and the muscles of the floor of the pelvis, under chloroform. This relaxation was explained by the withdrawal of the influence of the spinal marrow. A power of contraction was taken away, but this was accompanied by dilatation of the resisting parts, so that notwithstanding the deficiency of spinal contractile power, delivery was effected by the peristaltic action of the uterus. It was well known that delivery took place in the same way in certain cases of paraplegia, and even after death, but these facts by no means proved that the reflex function was not of the greatest importance in natural parturition. It appeared then, that in deep anæsthesia, the reflex actions of labour were weakened in power, but that this was accompanied by dilatation or relaxation of the parturient canal, the peristaltic action of the uterus remaining little, if at all effected. These data were of importance towards arriving at a conclusion respecting the value of chloroform in natural labour, and those accidents, as hemorrhage or laceration, which depended upon increased or diminished motor power. *Lancet, Nov.* 10, 1849, *p.* 508.

145.—CAULIFLOWER EXCRESCENCE OF THE OS UTERI.—BY Dr. E. Watson, Glasgow.

[Dr. Watson thinks that the following considerations tend to prove that the Cauliflower excrescence is not of a malignant nature:]

1. The progress of the growth is, generally speaking, slower than that of any known malignant disease with which we can compare it, such as encephaloid or colloid cancer, or of uterine hematoma. The early symptoms of the cauliflower excrescence are so very insidious, that it has generally existed at least for a year before medical advice is obtained, and even in cases where no treatment whatever has been adopted, the patient generally survives fully a year longer.

2. The usual age of the patient, in cases of cauliflower excrescence, is likewise different from that of the victims of malignant disease of the uterus. In nineteen cases of the former, the average age of the patient was thirty-seven, and no fewer than *eleven* were below it. Whereas, taking the nineteen first cases of cancer in Dr. Hughes Bennet's work on that disease, the average age is rather more than forty-three and a half years. Boivin and Dugés, from very extended observations, found that the ordinary ages of patients suffering from malignant disease of the uterus, ranged from 35 to 55, and that those belonging to the latter decade were more numerous than those belonging to the former.

3. The Cachexia attendant on malignant diseases, especially of the uterus, is generally absent from cases of cauliflower excrescence. In the last stages of this disease, the patient, doubtless, becomes pale and emaciated, owing to the constancy and profuseness of the discharge under which she is sinking, but it need hardly be remarked that such phenomena are very different from those of that premature decay which we denominate cachexia of malignant disease. It is an interesting corroboration of this remark, that

even in the last stages of cauliflower excrescence, the patient is capable of child-bearing; and, in three of the cases formerly adduced, the patients not only gave birth to living children, but survived their labours for several months. I am not aware that the same could be said of cancer, or of any other truly malignant disease of the uterus.

4. A not less remarkable distinction between the two classes of diseases which we are now considering, is that, during the whole course of the cauliflower excrescence, pain is almost never complained of by the patient. The discharge alone draws her attention to the disease; and when she is examined by the surgeon, it is found that the tumour itself is insensible to the touch. How different is such a state of matters from that which exists in cancer of the uterine neck. In the early stages of the latter affection, the cervix uteri is highly irritable and sensitive to the touch; and its first and last symptom is lancinating pain of almost intolerable severity.

5. It might be supposed that the microscope would lend important aid in the solution of this problem; but I fear it must be confessed that histological science has not sufficiently advanced to admit of our relying with certainty on microscopic characters in the distinction of malignant and non-malignant tumours.

The cancer-cell is the most trust-worthy sign of the former when it can be ascertained to exist in them, but this is by no means always an easy task; and even the most experienced microscopists have confessed their inability to distinguish it from certain other kinds of cells, such as from young plastic epithelial cells, or embryonal and cartilaginous cells. Little, then, can be argued from microscopical observations of the cauliflower excrescence in regard of its malignancy or non-malignancy, and even that little weighs in favour of the latter opinion. Only one out of four observers, viz., Dr. Anderson, saw "caudate corpuscles," to use his own words," like those Muller saw in cancer and other bodies of various shapes." Mr. Lee says he saw "cells within cells or compound cells; but these are by no means characteristic of cancerous growths, and, from his examination, he concludes that the cauliflower excrescence is "of simple structure, and not malignant." The whole tenor of Dr. Simpson's account of the excrescence examined by him indicates his opinion to be, that it is not a malignant growth, and he particularly remarks that he did not observe "any caudate or spindle-shaped bodies," such as are sometimes found in encephaloid structures. In none of the very numerous examinations made by me of all different parts of the cauliflower excrescence in my possession, was there detected any cancer-cell, or other body indicating malignancy of structure. I only found as formerly explained in detail, a considerable number of normal blood-corpuscles contained in a very delicate vascular membrane, and also a small quantity of fine cellular tissue in the centre of the growth. It will be perceived, then, that these microscopical investigations, so far from containing anything like a proof of the malignancy of this peculiar affection, rather tend, on the contrary, to establish the opposite opinion.

I have thus adduced cumulative evidence, warranting a conclusion, if not of absolute certainty, at least of the highest probability, that the cauliflower excrescence is not of a malignant nature; and that, therefore, we may advance to the removal of the growth with good hopes of a permanent cure of the disease. There can, however, be no doubt that such hopes depend for their fulfilment very much on the completeness with which the tumour is extirpated; and, with due deference, I beg to state it as my opinion, that the safest and most efficacious mode of accomplishing this end is by free excision of the affected lip, or, if necessary, of the entire neck of the uterus.

Monthly Jour., Nov., 1849, p. 1194.

ADDENDA.

146.—ON THE NATURE AND EFFECTS OF VARIOUS ANÆSTHETIC AGENTS.—By T. Nunneley, Esq., Surgeon to the Leeds Eye and Ear Infirmary, &c.

[A very elaborate paper by Mr. Nunneley has appeared in the Transactions of the Provincial Association, containing an account of a series of investigations undertaken by him for the purpose of ascertaining the following points:]

1. If the property of producing anæsthesia be confined to the few substances which have hitherto been used, or if there be not a large class of bodies which have in common the property of temporarily suspending consciousness or sensibility, or both, vitality remaining; and if this be so, whether these substances are characterized by any similar composition or chemical alliance, and have a common *modus operandi* upon animal bodies?

2. What their *modus operandi* is? or, in other words, upon what structures do they act? what changes do they produce? what are their physiological effects? is their primary effect local or general?

3. Is there any one of these substances which should be selected in preference to, or to the exclusion of, all the others? Is there any one the temporary effects of which are more complete and certain, the permanent more harmless, and its administration more under our control, than those of any of the others, that we should uniformly retain the employment of it, and reject the use of them?

4. Is there any essential difference, in the action of these substances according to the mode in which they are administered? Do they produce the same effects in whatever way they are carried into the body, or does the effect depend upon the nature of the tissue upon which they are applied? and does the same dose, when applied to the same tissue, and in the same manner, invariably produce the same uniform results?

5. Are there any symptoms by which we may accurately judge of their effects, and ascertain and control the point to which the system may with safety be brought under their influence?

6. In case of an overdose, are there any means which can be employed to counteract the effects? Do we possess any antidotes, or are there any remedies? If so, what are they, in what manner do they act, and how should they be employed?

[Mr. Nunneley observes:]

Nearly all of the substances which have hitherto been mentioned as anæsthetics, are compounds of the hypothetical radical ethyle—the assumed base of ether: substances which are formed of hydrogen and carbon united with oxygen, as an oxide of ethyle—sulphuric ether; or of this oxide, playing the part of a base, in combination, with an acid, as nitric ether; or of hydrogen and carbon united with chlorine instead of oxygen—chloroform, the most marked chemical character of these bodies being that they are all hydro-carbons. One other substance of somewhat analogous character has been mentioned, and shown to possess, to some extent, similar properties, in which the hydrogen has been replaced by sulphur—the bisulphuret of carbon.

From reflecting upon this circumstance, I was, some time ago, led to the supposition that not improbably many other bodies might be found to possess similar powers, possibly even in a more advantageous form than some already known, since the use of these appears, so to speak, to have been rather accidental and fortuitous, than the consequence of any reasoning upon their nature and mode of operating. In fact, it appeared to me, that

where hydrogen and carbon might be supposed to constitute an hypothetical radical or base, whether as ethyle, acetyle, methyle, or some other modification, they might be combined with another body; which third body might be replaced by another element, the properties of the compound remaining, to a great extent, the same. Thus, as ether is an anæsthetic, and composed of hydrogen and carbon, united with oxygen, which even may act as a base, and unite with an acid, one acid being capable of substitution in the place of another, the general character of an ether fluid remaining; and as chloroform is also an anæsthetic, in which the oxygen has disappeared and chlorine been substituted, so it appeared not only possible, but even highly probable, that this might be again replaced by iodine, nitrogen, sulphur or some other element, the new compound in property being analogous, if not identical with the old. That this is true, at least to some extent, is proved by the fact of hydrocyanic acid, a compound of nitrogen, carbon, and hydrogen, being a most powerful anæsthetic agent, perhaps the most powerful yet tried.

This, it will be at once perceived, is in some degree an extension of the beautiful theory of substitutions, now so generally admitted amongst chemists, applying the same doctrine to the therapeutic and physiological properties of ismorphous bodies, as has so long been known to prevail in their chemical qualities.

In pursuing the enquiry, I was led to endeavour to ascertain the truth of the converse proposition as to the different properties of bodies composed of the same elements in the same proportion, but possessing different chemical and physical qualities—isomeric bodies, of which the hydro-carbons under consideration form, perhaps, the most extensive class, many of them not differing materially in their ultimate analysis, whilst they are very diversified in their physical qualities. However this may be, as we know too little of the manner in which many of these substances are actually united, notwithstanding the laborious investigations and ingenious hypotheses of chemists, it seemed only proper that other substances, composed mainly of hydrogen and carbon, in combination with another element, should be tried; accordingly the subjoined list of substances tried will be found to contain several of these; the number might be almost indefinitely extended. Some of the bodies with which I had a strong desire to have experimented, from their rarity and the difficulty of making them, I found it impossible to procure, many being described by chemists rather on hypothetical grounds, than from their actual existence. Others are so unstable in their composition, that it is impossible to preserve them; the affinity between their elements is so slight, that they are no sooner made than they are decomposed, hence they never could be practically valuable whatever their action; whilst others, from their irritating properties, are useless. Some, as hydrocyanic acid and conia, are so destructive to life, as to be too dangerous to use; whilst, again, many others do not possess that property of volatility, or the solubility by which they can be made volatile, which is essential to their action; they are not ismorphous with the ether compounds.

Besides these triple compounds, I thought it not unadvisable to try the effects of some of the pure hydro-carbons, as naptha, turpentine, &c., and some of the bi-elementary gaseous bodies, as being most allied to the compounds which possess anæsthetic power, thinking this very power might possibly be dependent upon their containing these elements. One of these gases, if it did not actually suggest the idea to the introducers of these agents, certainly produces such effects, when inhaled by man, that with our present knowledge, some persons have expressed wonder that it did not lead its adventurous and glorious discoverer, Davy, to the full development of the idea of which he undoubtedly had the conception. It affords another most striking illustration of the observation, that no great and wonderful truth all at once bursts upon the world, but that is always preceded by various and portentous foreshadowings, which, like the handwriting upon

the wall, only require the skill of the prophetic seer, or the wand of genius, to develop to mankind.

Having ascertained that in order to possess anæsthetic powers, it was not necessary for a body to have a triple composition, but that some of the bi-elementary compounds also were endowed with it in a high degree, I was desirous of determining, if possible, if one element alone possessed the power, and if so, which of them; or if the combination of two or more be essential, of which in particular is the presence required. The only way to ascertain this was to exhibit, in succession, substances with one or more of the elements changed, it being impossible to present all of them in an uncompounded form, in that condition necessary for inhalation, or even for absorption; accordingly the list contains substances which some, at first, sight may be surprised at finding there.

They were examined, not only on their own account, but for the purpose of presenting bodies in which each of the elements entering into the constitution of a known anæsthetic was in succession removed, in order, by as exact an analysis as I could adopt, to examine each one element, and determine if it were essential or not to the possession of anæsthetic power; with what success we shall be better able to speak about after going over the details. The difficulties in arriving at a positive conclusion are considerable; but I may mention the results prove that oxygen, chlorine, hydrogen, and nitrogen may be excluded, and yet we shall put an animal into a complete state of anæsthesia.

[After detailing at length, a large number of experiments made with various substances, Mr, Nunneley gives a summary of the action and properties of each. Some of the observations upon the more interesting anæsthetic substances, we quote; and first,]

Chloroform.—It is of all the anæsthetics with which I am acquainted, (with one exception,) one of the most, if not the most, agreeable, and at the same time it is possessed of very considerable power. It is for the most part pretty constant in its action; but I am also bound to add, it is one of those which require more care in its administration than most of the others, and I would venture to say much more care than has always in practice been exhibited. It is true that many fatal cases in which it has been given are known, but, I am firmly convinced, there are many more fatal cases which have not been reported. Even in those cases which have come to light, all sorts of explanations, and attempts to explain away the true cause of death, have often been attempted, rather than admit the fact of the person having been killed by the chloroform. This is, perhaps scarcely to be wondered at; the admission of the fact would be almost like acknowledging being accessory to the death of the patient, which most men naturally shrink from. A careful examination, however, of the preceding experiments cannot, I think, but convince any impartial person that, in reality, death in these cases was caused by the chloroform; either from some abnormal condition or peculiar idosyncracy, by which the person was rendered unusally susceptible to its influence; or, as I believe, far more frequently from a want of that experience and care in its administration, which the exhibitor should have possessed and attended to. When I see statements by medical men that they have "boldly administered" chloroform in quantities of from six drachms to an ounce and a half at a time without any ill effects, I cannot but congratulate both the patient and the doctor that the rashness in employing such quantities has been equalled by the carelessness in administering it, so that by far the greater portion of the fluid has been wasted by escaping into the air of the room, rather than passed into the lungs of the patient, and thus the carelessness of the administrator has, contrary to what generally occurs, and which he would do well not to risk again, been the means of escaping from the effects of his rashness.

Two very important practical points, in reference to the administration of chloroform, appear to be proved by these experiments.

1st. That the effects produced upon similar animals by like quantities of chloroform, all circumstances, so far as can be ascertained, being precisely similar, are not identical, the effects being far more considerable in one than another: even upon the same animal the effects are far more decided at one time than they are at another.

2nd. That the intensity of effect appears much rather to depend upon the quantity of chloroform inhaled in a given time,—the concentration of the vapour, than upon the absolute quantity inspired. Thus a small quantity suddenly and quickly inhaled for a short space of time will produce, not only more rapid and decided effects, but also far more dangerous, than a far larger quantity will do, if taken in more slowly, and consequently in a less concentrated form. Many of the experiments show that when the creature inspired fully and deeply, and the temperature was high, so as to ensure a speedy conversion of the chloroform into vapour, that anæsthesia was not only quickly produced, but was also most decided; also that the effect was more prolonged if the animal recovered, and in many cases terminated in death.

There is one unpleasant effect which sometimes follows the administration of chloroform that I have not seen noticed, but of which I have found more than one person complain, namely, that for long (even months,) after its inhalation, they have occasionally experienced the same sensations as they did at the moment of breathing it. A highly respectable professional man (solicitor,) has told me that he regrets having inhaled chloroform, which he did many months ago, at Cheltenham, in the extraction of a tooth; since then, he has on three or four occasions suddenly awoke in the night, with precisely the same feelings that he had just before becoming unconscious while inhaling it. He is conscious, but unable to speak or to stir, and feels as though about to die. After a time these sensations pass off, but leave him languid during the ensuing day. He never experienced anything of the kind before, and attributes them entirely to the chloroform. I have heard others say they regret having taken it, feeling nervous and more tremulous than before.

Sulphuric Ether.—If ether be not so powerful in its effects as chloroform, it is certainly not so dangerous in its application; a larger quantity is required to produce a like condition of insensibility, and more time is occupied; the system is not so speedily brought under its influence. In the commencement of the inhalation, it is necessary to be very careful not to allow the air to contain too large a proportion of the vapour, otherwise so much irritation of the glottis and bronchial membrane is occasioned, and the respiratory muscles so violently excited to action, that the continuation of the inhalation must be, at least temporarily, suspended, sometimes even permanently. Another circumstance is, that before the animal is fully brought under its influence, there is some excitement, which, at times, is very considerable; so much so as to render a patient wholly unmanageable, the only method of calming him being to place the system more fully, and as rapidly as may be, under the influence of the ether; when, however, this is accomplished, if not carried too far, so much depression is not produced as by chloroform, and I think the condition of insensibility may be longer continued without danger when ether is used than when chloroform is. The action of the heart is not rendered so excessively feeble and rapid, and disappears sooner than after chloroform.

To counterbalance this, feverishness, heat, and pain in the head, are more apt to follow. While the action of ether upon the system is, I believe, of essentially the same nature as chloroform, it, in the first instance, is certainly more of an excitant than chloroform, and, as stated, if not used in very large and unnecessary quantities, or very long continued, it does not occasion such depression of the system; hence, in cases where there is reason to suspect any peculiar susceptibility to the action of the depressing influence of anæsthetics,—such as disease of the heart, of an asthenic cha-

tactor, or considerable constitutional debility,—if it be determined to use one of these agents, ether should, I think, be selected in preference to chloroform. So also when the operation itself is likely to produce a considerable shock and depression of the system, or where it is likely to be very long and tedious, then it may fairly be well considered whether ether may not be the safer of the two agents. On the other hand, when the patient is plethoric, or very excitable, or in whom there is a tendency to fever,—where there is any affection of the head, whether of the brain or its membranes, or predisposition to congestion,—any sthenic disorder of the heart, or disease of any kind in the lungs; if it be, notwithstanding these contra-indications, from any other consideration determined to use any anæsthetic agent,—then ether is not the one to be selected, on account of its stimulating property.

Dutch Liquid.—Chloride of Olefiant Gas.—This is not only an aromatic and very pleasant ethereal fluid, but a most valuable one; indeed, I believe one of the most valuable anæsthetics yet tried. In general properties it much resembles chloroform; but in composition it differs materially from it, in containing a much less proportion of chlorine and more hydrogen, as compared with carbon, in an atom; and its boiling point is very different, as a reference to the heads of the respective experiments will show.

A comparison of the experiments with chloroform and with the chloride of olefiant gas will show, that in no one respect is the former fluid superior to the latter. The animals were rendered perfectly anæsthetic in quite as short a time, showed no uneasiness while passing into this condition, remained perfectly still while in it, and on recovering were altogether free from any unpleasant symptoms. The condition of anæsthesia may be rendered as profound as possible, and quite as prolonged as can ever be requisite in any operation; and, so far as I can judge, there is not so much weakness and depression induced as by chloroform.

This fluid I have now administered so frequently in practice, that I think I am justified in stating the inferences drawn from the experiments upon animals are correct. It appears to be unattended with the troublesome excitement produced by ether, on the one hand, and on the other with less of the tendency to collapse, which is so objectionable in chloroform; hence if that only true test, experience in general use, should confirm this opinion, it will form a not unimportant addition to the list of anæsthetic agents.

I would here state that it appears not improbable that a combination of the chloride of olefiant gas with spirit, not a mere admixture of the two fluids, but a combination during manufacture, may probably prove, not only a sufficiently cheap, but a valuable anæsthetic; for I have made several experiments upon dogs and cats with a mixture of pure Dutch liquid (made by Mr. Morson and Mr. Bullock,) and alcohol, and also of spirits of wine, in various proportions, the results of which I find to correspond with the effects stated to have been produced by a fluid which I now consider to be a combination of the two.

Common Coal Gas.—Coal gas is not only a powerful anæsthetic, but, so far as my experiments go, it is also a very safe and manageable one. The animal is quickly brought into a state of unconsciousness and insensibility, and that without the least appearance of suffering. It does not act as an irritant, it does not excite a cough, there is no repugnance to the inhalation of it, and the condition of anæsthesia may be safely maintained for a period sufficiently long to allow the performance of most operations.

It appears to deserve a full and fair trial, and if in practice it should be found, as I believe it will, to be successful, the cheapness of it would be a recommendation not unworthy of attention, should its gaseous form not prove too inconvenient. It affords another instance of a hydrocarbon producing an unnaturally bright condition of the blood.

Bromoform.—This fluid acts as an agreeable anæsthetic, without producing any irritation whatever, and might probably be successfully employed

in practice, were it an article of easy production: but, inasmuch as it does not possess any striking superiority in any respect over other substances of a far cheaper character, its cost will be an effectual bar to its use.

[Besides giving these agents by inhalation, Mr. Nunneley has also applied them locally, and has administered them by the alimentary canal.]

Administration by the Alimentary Canal.—The experiments under this head, compared with others, are very interesting and important, as they prove most unequivocally that most, if not all, of these agents, when taken into the stomach or any portion of the alimentary canal, produce hardly any anæsthetic effect, acting at first as but little more than local irritants, unless the dose be very large: and even then, not producing so much effect as an equal quantity of spirit of wine. This is an effect which, *a priori*, hardly any one would have predicated, and which may assist in throwing some light upon their action, and evidently depends upon some property in the substance itself, inasmuch as we find a considerable difference in this respect amongst them.

Some act very violently and most speedily when applied upon the alimentary membrane, but with much less effect when applied by inhalation upon the respiratory membrane, as conia and spirit of wine. Hydrocyanic acid acts with great intensity, administered by either method, whilst the ethers, chloroform, Dutch oil, bisulphuret of carbon, (and especially sulphuretted hydrogen,) produce, so to speak, hardly any effect when taken into the stomach, but a very decided effect when inhaled.

[Mr. Nunneley has ascertained that anæsthetic agents will produce local insensibility when *applied locally*, without the necessity of producing loss of consciousness. They cannot, however, be so employed in a large number of surgical cases, including the principal operations. Mr. N. observes]

In the smaller operations they certainly may be used so as to induce complete anæsthesia; and if there be any constitutional impediment contra-indicating the internal exhibition, as great susceptibility to their action, (as I have known in persons of a hysterical or cataleptic diathesis.) there the local action should be preferred; but in other cases it is doubtful, if the longer time required for their application, and the smarting, which, if there be any abrasion of the skin, is great,) and if a wound of any extent, too great to inflict) which is occasioned, be worth undergoing for the sake of avoiding the inhalation; unless the part to be operated upon be small, I should say not.

There can, however, be no doubt that the local application of chloroform and other similar agents, in cases of severe pain, is often productive of the greatest comfort and relief. In painful and irritable tumours, the pain may often be alleviated. Tic douloureux I have seen disappear like magic, by rubbing the part with it, or saturating a piece of lint and covering it with oiled silk. Toothache may often be charmed away by a drop put within the decayed tooth. Lumbago and sciatica may be quieted by its use, and in many other cases the local action of chloroform has been very successful in relieving pain, as, indeed, great numbers of medical men, who have since the announcement of its local action tried it with manifest advantage, can attest.

[*Modus Operandi of Anæsthetics.*—Mr. Nunneley comes to the following conclusions upon this very difficult and intricate question:]

1. That the action of anæsthetic agents is immediately and primarily upon the nerves. That the heart, respiration, circulation, the blood, and the muscles are secondarily affected.

2. That in the first instance all these substances act as stimulants, this action being more or less prolonged, but to some extent perceptible in all. In the more powerful anæsthetics, as hydrocyanic acid. chloroform, and the chloride of olefiant gas, the stage of stimulation is short and comparatively feeble, (unless with the two latter the dose be very small, when it is evident enough,) the sedative effect being quickly superinduced. With most of the others it is

more prolonged; with ether it is considerable; with aldehyde it is still more so; with the bisulphuret of carbon, turpentine, and naptha, even when inhaled, it is very great, and when applied locally, intense inflammation only is induced, anæsthesia scarcely being occasioned; while with alcohol, even when taken internally, unless the quantity be enormous, only the stimulant effect is produced at all.

3. That the action is at first local. When these agents in substance or in vapour are applied to a limited portion of the body only, that portion is rendered anæsthetic; but that if the application be more prolonged, or extended over a larger surface, then the effects become general. Thus we may paralyse a part, or the whole of a single leg in the frog and toad; by continuing the application, the corresponding limb becomes involved, and a still farther continuation will affect the entire body of the creature, consciousness, sensation, and motion being all lost. In a large insect, or a reptile, we may stupify the anterior or posterior half of the body with the attached limbs, the other part remaining unaffected. Even with the higher animals, the experiments demonstrate that, in the cat and rabbit, a part of a leg may be locally so affected as to be altogether insensible to the amputation of it, the general system not differing from its normal condition. In man, a small portion of the surface, or an entire finger, may be made insensible, the feeling of numbness extending along the nervous trunks far beyond the part to which the application is made. Hence we may fairly conclude that the law universally holds good.

4. That although the action of anæsthetic substances is upon the nerves, and principally upon those in connexion with the cerebro-spinal axis, it is not primarily and directly upon the cerebral masses and sensorium, but upon the peripheral expansions of the nerves; that, *cæteris paribus*, the larger the number of these which can be directly and simultaneously acted upon, the greater will be the effect. Hence the *rational* of the action of these substances when inhaled. When taken in substance into the stomach, they can only come in contact with a comparatively small number of terminal nervous papillæ, whereby is occasioned their stimulant, rather than their anæsthetic effect; but when inhaled, they come into contact with the whole expanded respiratory surface and the nerves there exposed. Of course the more concentrated the vapour, the more intense and sudden will be the anæsthetic effect.

[*Administration.*—Mr. Nunneley recommends us to use, for the exhibition of anæsthetics, "a large, moderately fine, linen handkerchief, folded first into quarter size, and then into a funnel shape." Mr. N. allows that the inhaler, as recommended by Dr. Snow, would be preferable, if, as that gentleman states, we could by this means accurately measure and regulate the quantity of vapour administered. This, however, he thinks, would not be the case in practice. Mr. Nunneley thinks that it is a very common mistake to carry the anæsthesia too far: it is not necessary, he observes, to render the patient utterly *powerless*, in order that no sensation of pain should be perceived. With respect to the signs which indicate the degree of anæsthesia, Mr. N. observes:]

The first indication of an animal being pretty well under the influence of the agent is the deeper, fuller, and more prolonged respiration; he inhales as though it were pleasant to do so. This is not always observed, though it very frequently is. At first there is some little excitement, and a disposition to move; the pulse is rather fuller and quicker; the pupils somewhat contracted, and the eyes wandering; there is often incoherent talking; these symptoms easily pass off, and loss of volition, and indisposition or inability to move, comes on; the eyes become upturned, the pupils dilated, the pulse smaller, the muscles flaccid, and unconsciousness and insensibility ensue. If the quantity of vapour be now lessened, the respiration becomes more free and natural: if not it will be laborious, and presently almost, or entirely cease. The lips become closed, and in expiration the cheeks may be distended

by the air, which in escaping may produce a blowing noise. This I regard as a certain sign that the system is so fully under the influence of the anæsthetic, as to border upon danger. The distension and blowing noise arise, I think, from the total loss of motion and sensation in the lips and cheeks, which thus become mechanically distended by the force of the expired column of air. At this point, or before, (for the last symptom is by no means invariably present, the mouth being opened instead of closed,) the pupils are widely dilated, the limbs become as flaccid as possible; there is no reflex action, the urine or fæces, or both, may involuntary escape, the conjunctiva and lining membrane of the mouth, often, indeed, the whole countenance, become pale and bloodless; the heart may be perceived acting most rapidly, with a short, feeble throb, the pulsation in the arteries being scarcely, if at all perceptible, and the respiration becomes either very quick and inefficient, or slow and gasping. If this entirely stops for any length of time, even though the heart may be felt still to move, recovery will be very doubtful. In operating, if the surgeon should find the flow of blood to cease, he ought *immediately* to be on his guard, as this may indicate such a condition of anæthesia as to seriously compromise the heart's action; and if the inhalation be carried farther, might be fatal.

The indications, then, to be attended to in administering anæsthetics, especially the more potent, are,

Not to employ too much of the agent at one time.

To take care that the temperature be not too high.

To be sure that the air can easily and freely pass into and out of the lungs.

Not in the first instance to allow the vapour in too concentrated a condition to be inhaled, which is easily regulated by not putting the cloth too closely over the face in the first instance; or, if an apparatus is used, to open the air valve. If there be no excitement, not to increase the strength of the vapour; but if there be excitement, then by applying the cloth more closely, or by shutting the valve, to terminate this by more fully and quickly bringing the system under the full influence of the agent, but taking care that so soon as there are indications of unconsciousness and insensibility being produced, in a great degree to withdraw the anæsthetic, and only to give such a diluted vapour as shall just suffice to keep up the condition of insensibility, which, when once produced, may be usually maintained by a very moderate quantity of vapour; for it must be borne in mind that the *full effect* is not always *instantly* produced as the vapour enters the lungs, nor do the effects always immediately pass off; indeed the rapidity with which the effects disappear does not always correspond with their intensity. If these directions be attended to, rarely will death be occasioned by either ether, chloride of olefiant gas, or chloroform, although as I have before stated, chloroform I consider to be the most dangerous of all: yet even of this, when due care is exercised, experience has shown the danger not to be very great.

[Lastly, Mr. Nunneley speaks of]

Remedies.—Various remedies have been suggested as possessing a controlling power over the effects of too great a dose of ether and chloroform; as yet their advocates can only advance assertion, or arguments based on theoretical grounds, in favour of their respective favourite means. From some of these means upon which most stress has been laid, if my ideas of the action of ether and other anæsthetic agents be correct, little good can be effected; but, nevertheless, it was only right to give them a fair trial. The remedies resorted to are ammonia, cold affusion, agitation, bleeding, galvanism, and oxygen; either alone, or in combination. In trying the effects of these, of course it was necessary to endeavour to bring the animal fully under the influence of the anæsthetic, otherwise by the mere cessation of the action of this, a natural resuscitation would ensue, and, possibly, value be attributed to the means tried to which it is not entitled.

[Mr. Nunneley regards *ammonia* as altogether valueless. He has the same opinion of *bleeding* in most cases. *Cold affusion* and *agitation*, he says, undoubtedly possess some power in hastening recovery, but not much; and the use of these measures is doubtful when the anæsthesia is profound, and consequently when the danger is the greatest. *Galvanism* is also useless. Respecting *oxygen*, which has been so much extolled by some. Mr. Nunneley remarks:]

In recommending several of the so called remedies and antidotes, one most important circumstance appears to have been altogether overlooked, namely, that in the cases where their employment is advised, there is no means of administering them. Deglutition is destroyed, consequently fluids cannot easily or safely reach the stomach, and respiration has ceased, or nearly so, hence gaseous matters cannot be inhaled, even were they at hand; for the administering such gases by artificial respiration would be very difficult and imperfect.

This is supposing it were certain that they are as valuable as has been supposed, which I believe not to be the case. If oxygen, or any other gas is to act as an antidote, it must be by decomposing the chloroform or other agent in the lungs; but as oxygen does not decompose these fluids out of the body, it is not likely to do so within, even did these fluids remain any time in the lungs, which they do not. To act as a remedy, it must be either by directly destroying the action which the poison has occasioned, or by setting up an opposite action which shall counteract it. Now as we have no evidence that the action of chloroform and allied anæsthetics in any way depends upon the abstraction of oxygen from the blood or tissues, or prevents the exhalation of any noxious matter which the presence of oxygen favours, there is no reason to suppose the presence of this body will counteract or destroy the influence of them.

The opinion which appears fairly deducible from reasoning alone, is fully borne out by facts. So far as the experiments with oxygen go, they show it to be altogether useless; indeed, if any conclusion is to be drawn from them, it would rather be that oxygen, instead of being beneficial, is injurious.

[Mr. Nunneley, in conclusion, makes the following practical observations upon the means of counteracting the effects of an over-dose. He says:]

In the great majority of cases, so long as the heart acts, and respiration at all goes on, the mere withrawal of the anæsthetic is followed by the restoration of the functions, and therefore the question forces itself upon us as to the positive value or not of any of these means. If the heart has ceased to act, no blood will flow on a vein being opened. If respiration has ceased, and the heart does not move, galvanism, though it may make the voluntaray muscles violently contract, only does this by the sooner exhausting their power to do so, without in any way restoring the vital functions. Oxygen, of course, if there be no respiration, cannot be taken into the lungs, and the performance of artificial respiration with it would be both difficult and incomplete, even were it at hand, which it would not in the great majority of cases be, while, so far as experiment and chemical action goes, it does not appear that if it were ever so fully inhaled, even in combination with the anæsthetic substance, it would in any manner prevent the developement of full anæsthesia, and therefore it cannot be for a moment imagined it would in any way counteract the effects when they are developed. Ammonia we have seen to be useless and inert, whether given mixed with the substance or after its effects were produced. The coldness and depression which in so marked a degree are present do not encourage us in the supposition that either cold water or cold air, to a very great extent, would be useful—a conclusion which the experience of their effects confirms. We are, therefore, reduced to seek just that assistance from their use as shall suffice to produce such a moderate shock, if the nervous system be ca-

pable of receiving any, as may cause a reaction and rousing of its powers, by which the heart and respiration may again be set in motion, or rendered more vigorous. This, as I have before said, appears far more likely to be accomplished by the sudden dashing of a small quantity of cold water upon the face and chest, possibly alternating with heat to the latter, or such a moderate stream of air as may be produced by a fan, and a not too violent agitation of the body than by excessive violence, or by entire and long continued immersion. A moderate interrupted compression of the chest, and pressure upwards of the abdominal viscera, should not be neglected, as tending to change the air in the lungs, and thus to get rid of the vapour there remaining; or, with the same intention, a stream of air might be, not too forcibly, blown through a small tube into the larynx for a minute or two.

These are remedial means which some will, I doubt not, be disposed to exclaim are very paltry and meagre, and which, it must be allowed, are not of a very energetic or hopeful character: but it is far better to employ such as may do a little good than to have recourse to those which not only may, but probably will, do great harm.

Prov. Med. and Surg. Transactions, Vol. XVI., p. 167.

147.—THE RELATIVE POTENCY OF CHLOROFORM AND ETHER, AND SOME DANGEROUS EFFECTS OF CHLOROFORM.—By Dr. JOHN SNOW.

Chloroform is much more powerful than ether, and this is one reason why it is in some respects more convenient. Its greater potency depends on its being more sparingly soluble in the blood than ether. The quantity of chloroform required to induce insensibility is less than one tenth as much by measure as in the case of ether. Viewed in this manner it is more than ten times as strong; but to ascertain their comparative physiological power, when inhaled in a similar manner, their volatility requires to be taken into account.

In order to perceive the relative strength of these two medicines, we may suppose that the air which a patient breathes is saturated at 60°,—the ordinary temperature of a dwelling room,—with one or other of the vapours, and see how much air he would have to breathe in either case. In order to be narcotized to the third degree,—the extent of insensibility usually required in a surgical operation. Thirty-six minims is about the average quantity of chloroform required to produce this degree of narcotism in the adult, and this would saturate 257 cubic inches of air at 60°, making it expand to nearly 300 cubic inches, which would be breathed in twelve ordinary respirations of 25 cubic inches each. The quantity of ether usually required to produce the same amount of insensibility in the adult, is about 7½ fluid drachms; this would saturate 440 cubic inches of air at 60°, and increase its volume to rather more than 800 cubic inches, which would require 32 ordinary respirations to breathe it. We see, therefore, that 12 inspirations of air charged with vapour of chloroform are equal to 32 similar inspirations of air charged with vapour of ether, at the same temperature and that, consequently, chloroform is nearly three times as strong as ether.

In actual practice, the difference in strength is generally greater than this, for ether abstracts much more caloric than chloroform during its evaporation, thereby reducing the temperature of the air passing over it, and the sponge or whatever contains it, and limiting its own evaporations in a greater degree. It follows, therefore, that the fact of accidents not occurring under the use of ether, could be no guarantee that they would not happen during the employment of chloroform.

When an animal after it has become completely insensible, is allowed to continue breathing air charged with the vapour, the respiration shortly ceases; but if the air do not contain more than about 5 per cent of the va-

pour, the heart continues to pulsate for some time after the breathing has ceased, and the circulation is finally arrested for want of the respiration, as in all other cases when death takes place by apnœa. I have heard the pulsations of the heart, by means of the stethoscope, several times, for one or two minutes after the breathing has ceased, in cats and rabbits under the influence of chloroform. During this interval, life is easily recalled by means of artificial respiration; indeed, more than once, moving the animal, or pressing on its chest, whilst using the stethoscope, has apparently been the means of recuscitating it. This persistence of the heart's action, as I have elsewhere shown, does not arise from any incapacity of chloroform to paralyze it, but from the circumstance that the sensibility of that part of the nervous system on which the motions of respiration depend, is abolished by a somewhat smaller quantity of the narcotic than is requisite to suspend the action of the heart. When, however, an animal is made to breathe air containing a greater quantity of the vapour, ten per cent. or upwards, death takes place rapidly in from half a minute to about two minutes, and the respiration and circulation cease about the same time. The reason of this is, that there is sufficient vapour in the lungs, at the moment when the breathing stops, to paralyze the action of the heart as soon as it is absorbed, and added to that already contained in the blood. Under these circumstances, it is evident that artificial respiration can be of no avail; and this is the manner in which, there is every reason to believe, the greater number of the fatal cases of inhalation of chloroform have occurred.

Sometimes a patient begins all at once to breathe deeply during the inhalation; and, under these circumstances, if the vapour be not largely diluted, it will be inspired with dangerous rapidity. The first incision by the surgeon's knife, when the patient is unconscious, but not totally insensible, sometimes has the effect of causing him to draw a deep inspiration, and to hold his breath at the end of it, retaining the air in his lungs; now an inspiration of this kind, might, on a moderate computation, introduce 100 cubic inches of air; and if this were charged with vapour of chloroform, by passing over a handkerchief or sponge, it might contain ten or twelve minims; if the air or the handkerchief were warm, it might, indeed, contain much more; but this quantity added to that already in the circulation, might cause a fatal accident.

It must be sufficiently evident, from these considerations, that, unless some means were used for regulating the strength of the vapour, fatal accidents would be liable to occur from the employment of chloroform. Unfortunately, Dr. Simpson, to whom we are indebted for its introduction, recommended it to be used on a handkerchief, and even held it out as one of the advantages of the new anæsthetic, that it did not require any apparatus. This advice, coming from so high a quarter, could not fail to meet with numerous followers; and to this circumstance, many of the accidents that have occurred must, in my opinion, be partly attributed.

Edinburgh Med. and Surg. Jour., July, 1849, p. 96.

143.—ACCOUNT OF A CASE OF DEATH FROM CHLOROFORM.—By SAMUEL SOLLY, Esq., Surgeon to St. Thomas's Hospital.

John Shorter, aged 48, a porter, known to Mr. Solly for some time as a very active messenger, habits intemperate, but apparently in perfect health, was admitted into George's ward, under Mr. Solly, on the 9th October, 1849, suffering from onychia of the left great toe, which had existed some time. It was determined to remove the nail, the man having decided before entering the hospital on taking chloroform.

On Wednesday, Oct. 10, at a quarter to 2 p. m., he began to inhale the chloroform with one drachm in the inhaler. It had no visible effect for about two minutes; it then excited him, and the instrument was removed

from his mouth, and about ten drops more were added; he then almost immediately became insensible: the chloroform was taken away, and the nail removed. He continued insensible; and, his face becoming dark, the pulse small, quick, but regular, respiration laborious, his neckerchief was removed, and the chest exposed to fresh air from a window close to the bed; cold water was dashed in his face, the chest rubbed, and ammonia applied to the nose. After struggling for about a minute, he became still, the skin cold, pulse scarcely perceptible, and soon ceased to be felt at the wrist; respiration became slow and at intervals, but continued a few seconds after the cessation of the pulse. Immediately on the appearance of these symptoms, artificial respiration was commenced by depressing the ribs with the hands and then allowing them to rise again until the proper apparatus was brought, when respiration was kept by means of the trachea-tube and bellows, and oxygen gas introduced into the lungs by the same means. Galvanism was also applied through the heart and diaphragm, but all signs of life ceased about six or seven minutes after the commencement of inhalation. These means were persisted in until a quarter past 3, but to no purpose. On removing the inhaler, the sponge which only contains one drachm, fell upon the floor, and the chloroform splashed about,—thus showing that a considerable part of the chloroform remained unused; so that the patient could not have inhaled more than a drachm. Every endeavour was made to procure a post-mortem examination, but in vain.

Med. Gaz., Nov. 2, 1849, *p.* 757.

149.—CASE IN WHICH A VERY SMALL DOSE OF CHLOROFORM WAS EFFICIENT.—By Dr. T. P. Heslop, Resident Medical Officer to the Birmingham General Hospital.

[In this case the chloroform was administered to relieve the pain produced by the passage of a gall stone. Dr. Heslop tells us that]

Thirty minims were accurately measured, and placed upon the sponge of a simple inhaler. The inhaler was scarcely adjusted when she was sound asleep; certainly no more than one second elapsed before complete sleep was induced, altogether without prior excitement and muscular spasms. There was no very obvious alteration of the circulation. The inhaler was instantly withdrawn, and in about a minute she awoke. She began to utter cries of pain again as before the chloroform was inhaled. The inhaler was again adjusted, without any more chloroform being placed upon the sponge, and she was again, in about two or three seconds, put into a profound sleep, without the slightest previous excitement. On this occasion the inhaler was kept on the mouth a longer time, and therefore she remained asleep several minutes the pain being completely suspended. On re-awaking, and again complaining of pain, I put ten minims upon the sponge, which had been previously moved to and fro in a current of air. This appeared to produce only uneasy sensations; fifteen minims were added, when she began to exhibit the muscular spasms and excitement ordinarily attendant upon the exhibition of chloroform in the first stages of its action. This woman was in the recumbent posture during the whole time. As far as we know, the cerebral, respiratory, and circulatory systems are healthy. Surely this is powerful proof of the importance of attending upon idiosyncrasy in the administration of this remarkable agent; and as we have no means of discovering this in a particular patient before the chloroform is given, it must be concluded that it behoves us to commence, as a rule, with the minimum dose.

Med. Gaz. June 15, 1849, *p.* 1035.

159.—PROCESSES OF REPAIR AND REPRODUCTION.—By JAMES PAGET, Esq., Professor of Anatomy and Surgery to the Royal College of Surgeons.

While studying the means by which living bodies, having suffered injury, regain their perfection, we may find continual manifestations of the same mysterious properties of the germ by which, through development, they first attained it. And in these manifestations we may discern the best evidence that, in developing the body to its perfection, the power of the germ is not lost, or quite exhausted, but rather is diffused through all the parts of the completed being; and that so diffused, it works in them through all their life, determining, as with continuous design, every natural formative process, in accordance with the specific character of the individual. For I believe that we cannot form a just conception of the scope and nature of even the least of the processes of repair and reproduction after injury, or of the maintenance of the body in ordinary nutrition, or of its natural changes in the course of age, unless we admit that each organism, in its perfect state, retains, diffused through all its parts, some of the specific properties from which the power issued that actuated the impregnated germ in its development.

The characteristic property of an impregnated germ is, that when placed in favourable circumstances, all the materials of which it first consists, and all that it appropriates, are developed according to the same method as was observed in the development of its progenitors,—in other words, in conformity with what we may regard as a law of specific character. In all the wonders of development that my colleague, Mr. Owen, has detailed, none, I think, appeared more marvellous than the constancy, the seeming tenacity of purpose, with which the germ is thus developed to the likeness of its parents. However vast its power of multiplication and increase,—however various its metamorphoses,—however far in some of these changes it may deviate from the form in which its parents generated it,—however near in some it may approach the perfect character of another species,—or which is stranger still, however much alike all germs may be in their primal structure and earliest developments—yet through all these things, each germ moves, with unswerving progress, guided by the same Power as created its first parents, to the formation of a being in which the parental form and properties are reproduced.

Now, the constancy of this result, and its little dependence on external circumstances, justify the expression that every impregnated germ has, in itself, and in the properties with which its Maker has endowed it, the power to develop itself into the perfection of an appropriate specific form. However mysterious the nature of such properties, we cannot deny their existence, or refuse to recognize a law (in the sense in which we generally use that term,) in the regularity with which the power acts that issues from them, when the germ is placed in favourable conditions. And, therefore, if it appear that this power is peculiar in its modes of operation, we may specialize it, whenever acting, as the "power of the germ," or "germ power," in consideration of its having its apparent origin and intensest action in the germ.

The accepted doctrine in physiology seems to be, that each structure in the body has the power of taking from the blood, by a kind of elective affinity, certain appropriate materials, and of so influencing them that they assimilate themselves to it; i.e. they adopt or receive its form and properties, and incorporate themselves with it; or else it is held that each cell or structural element of a part, whilst developing itself into some higher form, leaves behind or produces germs, cytoblasts, or off-shoots, which shall pass through the same development as itself, and in due time succeed to its place and office.

But since we see that the continual mutation of particles for the growth and maintenance of the living body by nutrition manifests in all essential things, the peculiar features that characterized the first formation of the

same body from the germ, we seem justified in holding that it is one and the same power which, being maintained continuously from the germ to the latest period of normal life, determines all organic formation. Whatever be the properties of the germ from which this formative power emanates, they must, in due measure, be communicated to all the materials that the germ appropriates, and, successively, to all that enter into the construction of the developing body; so that in all its living parts there is a measure of the same power as was most vividly concentrated in the germ. Under this power, the organic assimilative force, in some instances, and the production of successive tissue-germs in others, appear to work as subordinate agents; but in many instances, as in the formation of blood, the power seems to act more directly upon amorphous organic matter, which in the perfect body, as in the germ, it informs according to the law of specific character.

If what has been said appear sufficient to prove the operation of the germ-power, in the ordinary maintenance of the body, i.e. for the reproduction of particles which are absorbed or cast off at the term of their natural life, then more than sufficient evidence for the same opinion will appear in the phenomena of repair and reproduction after injuries. These, occupying, as it were, a middle place between the phenomena of embryonic development and those of ordinary nutrition, have of late been alternately, or in different instances, referred to one or the other of the different powers by which those phenomena are supposed to be governed. But, probably, the likeness of the phenomena of reproduction to those of both nutrition and embryonic development should have suggested, as they did to Blumenbach and Treviranus, that all the three are manifestations of one and the same power. That they are so will be evident, I think, in what I shall have to describe in the following lectures.—For, 1st, it will be clear that repair and reproduction cannot be in any case explained as the result of assimilation or by the succession of tissue-germs. In grave injuries and diseases, the parts that might serve as models for the new materials to be assimilated to, or as tissue-germs to develop new structures, are lost or spoiled; and yet the effects of injury and disease are recovered from, and the right specific form and composition are regained. And, secondly, if we watch the manner in which the recovery is achieved, we shall discern in it all those characters which mark the operations of the power of the germ. We shall see that the reproduced parts are formed, not according to any present model, but according to the appropriate specific form, and often with a more striking evident design towards that form, as an end or purpose, than we can discern in the natural construction of the body. We shall see, too, that in this reformation there is an independent, though concurrent, development of many parts —and that the whole process is limited by the same restrictions of time, and space, and exact method, as those observed in the original development of the parts. This, also, may be added to the arguments already adduced to prove the continuous action of the germ power through life, and its slight variation therein; that when in an adult animal, a part is reproduced after injury or removal, it is made conformable, not only to that condition which was proper to it when it was first formed, or in its infantile life, but to that which is proper according to the time of life in which it is reproduced—proper, because like that which the same part had at the same time of life, in members of former generations. In the reproduction of the foot or the tail of the lizard, they grow, as it were, at once into the full dimensions proper to the part, according to the age of the individual. Spallanzani expressly mentions this: that when a leg is cut off from a full grown salamander, the new leg and foot are developed, as far as form and structure are concerned, just as those of the larva were; but as to the size, they from the beginning grow, and are developed to the proper dimensions of the adult. The power, therefore, by which this reproduction is accomplished, would seem to be, not the mere revival of one which, after per-

fecting the body, had lapsed into a dormant state, but the self-same power which, before the removal of the limb, was occupied in its maintenance by the continual mutation of its particles, and now engages itself, with more energy, in the reconstruction of the whole.

Our ideas of the consumption of power in the organization of matter, are, perhaps, unavoidably, very vague; yet there are facts enough to prove that the power which can issue from the mysterious properties of a germ is limited; that it is not ever communicated to an indefinite quantity of matter; and there are enough to justify the hypothesis, that the germ power, thus limited is in some measure consumed in the development of every new structure, and, in a less measure, in the growth and maintenance of those already formed. The instances to which I shall refer are explicable on this hypothesis, and are, therefore, evidences of its probability.

First, then, it appears constantly true, that the reparative power is greater in all parts of the young than of the older individuals of all species. Even when we compare individuals that have all attained their highest development and growth, this rule seems to be true. We know it from general observations of the results of similar injuries and diseases in persons of different ages; numerous as the exceptions may be, the general rule seems true. And it is yet more evidently proved in the cases of some lower animals. Spallanzani mentions it expressly in regard to the reproduction of the tail of the tadpole. The quickness with which the work of reproduction is both begun and perfected, was always, in his experiments, in an inverse ratio to the age of the tadpole.

He says the same for the reproduction of the legs of salamanders, and it is only in young frogs and toads that any reproduction of the limbs will take place. So, too, in the experiments on the repair of fractures, the union of tendons and the like, in the mammalia; one may see abundant evidence that the vigour and celerity of the process are in an inverse proportion to the animal's age. There is, indeed, some reason to believe, that in the very early period of embryonic life, a true reproduction of parts of limbs may take place, even in the human species; (for not to speak of the possibility that supernumerary members may sometimes have been formed in consequence of accidental fission of the budding limbs of the embryo,) there are some cases in which fingers are found on the stumps of arms in such circumstances as justify the belief that after a limb had been accidentally amputated in the uterus, these had been produced on its remaining portion.

All these facts agree well with the belief that the germ-power is gradually diminished in the acts of organizing matter for the maintenance of the body; and the difference between the reparative power in children and that in adults appears so much greater than the difference in adults of different ages, that it is probable the germ power is more diminished by growth than by mere maintenance.

However this may be, it seems certain that the capacity for the repair or reproduction of injured parts is much more diminished by developement than by growth or maintenance of the body; i. e., much more by those transformations of parts by which they become fitted for higher offices, than by the multiplication or maintenance of those that are already perfect in their kind and functions. In other words, to improve a part requires much more, and more perfect, formative power, than to increase it does.

This, as a general principle, is exemplified in many instances. In the greater part of congenital malformations we find arrest of development, but no hindrance of growth; as a heart, in which a septum fails to be developed, yet grows to its full bulk. So, if tadpoles be excluded from due light and heat, their development will be much retarded, but their growth will be less checked. So, too, in the miscalled cultivation and improvement of flowers, growth is increased, but development is hindered; and an excess of coloured leaves is formed, instead of the due number of male and female organs. Or again, in an old ulcer or a sinus cells may be continually reproduced,

maintaining or even increasing the granulations, yet they will not develop themselves into cellular tissue and cuticle for the healing of the part; and so, even when repair and reproduction have gone far towards their ultimate achievement, that which takes a longer time, and oftener fails, is the improvement, the perfecting the new material, by its final development. This is observed in all cases of reproduced limbs, and even in ordinary scars.

These facts (and there are many others like them) seem to justify the expression that, not only more favourable conditions, but also a larger amount of organizing force, is expended in development than in growth. If we may thus interpret the facts, they will be collateral evidence for the belief that, in different species of animals, the reparative power will bear an inverse ratio to the amount of development already passed through; so that, for each species, in its perfect state, the reparative power might be measured by the degree of likeness between the embryonic and the perfect form, structure, and composition. The greater the sum of dissimilarities in all these respects between the embryo and the perfect animal, the less seems to be the reparative power in the latter.

It is consistent with this that the highest amount of reparative power exists in those lowest polypes, in which, as my colleague has so ably argued, the materials of the germ-mass yet remain, not transformed, but multiplied, and, as it were, grouped into the shape of their bodies. In the fresh water Hydra, the power of the germ appears communicated without loss to all the cells that descend by multiplication from the original germ-cells; provided only the cells are not developed into higher forms or into subserviency to special functions. In the hydra viridis, and hydra fusca, it seems literally true that any minute cluster of cells, derived by mere multiplication from those of the germ-mass, may, after having been separated from the perfect body, reproduce the perfect form. This is the general truth of the numerous experiments performed on hydra by Trembley, Roesel, and others. They have been so often quoted, that I need not do more than mention the greatest instances of reproductive power that they showed.

Trembley cut an hydra into four pieces: each became a perfect hydra; and while they were growing, he cut each of these four into two or three. These fractions of the quarters being on their way to become perfect, he again divided these, and thus he went on, till from the one hydra he obtained fifty. All these became perfect; he kept many of them for more than two years, and they multiplied by their natural gemmation just as much as others that had never been divided. So that a division by fifty did not perceptibly diminish the power of the germ present in the polype that was thus subdivided. Again, he cut similar polypes longitudinally, and in an hour or less each half had rolled itself, and seemed up its cut edges, so as to form a perfect hydra. He split them into four—he quartered them,—he cut them into as many pieces as he could, and nearly every piece became a perfect dydra. He slit one into seven pieces, leaving them all connected by the tail, and the dydra became seven-headed, and he saw all the heads eating at the same time. He cut off the seven heads, and, hydra-like, they sprang forth again. And even the fabulist dared not invent such a prodigy as the naturalist now saw. The heads of the Lernæan hydra perished after excision; the heads of this hydra grew for themselves bodies, and multiplied with as much vigour as their parent trunk.

Now these instances may suffice to show, that in the lowest polypes the process of reproduction after injury confounds itself with that of their natural generation, by gemmation, or, as it probably more rarely happens, than by spontaneous fission.

We cannot discern a distinction between them; and there are some things which seem to prove the identity of the power which operates in both. Thus, in both alike, the formative power is limited according to the specific characters of the hydra; immense as the power of increase is, which may be brought into action by the mutilations of the hydra, yet that power can-

not be made to produce an hydra of much more than ordinary size, or to raise one above its ordinary specific characters. And again, the identity of the power is shown in this,—that the natural act of gemmation retards that of reproduction after injury. Trembley particularly observes, that when an hydra from which the head and tentacula had been cut off, gemmated, the reproduction of the tentacula was retarded soon after the gemmula appeared.

The instance of the hydra is only one of many proving it to be a general law, that a large power of repair and reproduction after injury exists in the species in which propagation by spontaneous fission, or by gemmation, is possible. I need not say how consistent this is with Professor Owen's doctrine—that Partheno-genesis, or the capacity of generating without previous impregnation of the parent, is dependent on a retention of a part of the original germ-cells, or of their direct and untransformed descendants, within the body of the parent. Wherever such cells are, there is the power, without the need of impregnation, of producing a new individual; and in all the instances in which such cells form part of the general substance or parenchyma of the body, an injury may be said to act only as a stimulus, exciting the premature exercise of a ready power, which, in the natural case, appears as the generative, but, in the accidental case, appears as the reparative power.

I need not enumerate the species which manifest this coincidence of the power of propagating by gemmation, or fission, and of reproducing large portions of the body, and even of reconstructing, from fragments, the whole body. They include, as chief examples, the Actiniæ, which, after bisection form two perfect individuals,—and the Holothuriæ, which, as Sir J. G. Dalyell has observed, when hurt or handled, will eject all their viscera, leaving their body a mere empty sac, and yet in three or four months will have all their viscera regenerated. They include, also from among the Anellata, the young Nereids, and those species of Nais, on which Bonnet, Spallanzani, and others, made their marvellous experiments,—experiments of which the climax seemed to be achieved when a Nais was cut by M. Lyonnet into thirty or forty separate pieces, and there were produced from these fragments as many perfect individuals.

Instead of dwelling on these instances, let me mention some observations, made by Sir J. G. Dalyell, upon other polypes, which seem calculated to illustrate in a remarkable manner the general laws of the reparative processes in even the higher animals.

In the Hydra Tuba,—the species of which he has traced that marvellous development into Medusæ,—he has found that when cut in halves, each half may regain the perfect form; but this perfect form is regained only very slowly, and, as it were, by a gradual improvement of parts that are, at first, ill-formed. The fact may possibly be explained (as he suggests) by the mutilation having disturbed the progress of the Hydra in its development of young Medusæ; for the experiment was made in March, nearly at the time when the series of changes should have commenced. But, if I may venture not to accept the suggestion of so admirable an observer, I should suspect rather that this is an instance of gradual recovery of perfection, such as we see more generally in the repair of injuries and diseases in the higher animals.

He has noticed something of the same kind, and more definite in the Tubularia, indivisa. A fine specimen was cut near its root, and after the natural fall of its head, the summit of its stem was cloven. An imperfect head was first produced, at right angles to the stem, from one portion of the cleft; after its fall, another and more nearly perfect one was regenerated, and, as it grew, improved yet more. A third appeared, and then a fourth, which was yet more nearly perfect, though the stem was thick, and the tentacula imperfect. The cleft was almost healed; and now a fifth head was formed quite perfect; and after it, as perfectly, a sixth and seventh head. All these were produced in fifteen months.

The lower half of this specimen had been cut off four months after the separation of the stem. Its upper end bore—first, an abortive head; then secondly, one which advanced further in development; a third, much better; and then, in succession, other four, which were all well formed.

The upper portion of this lower half of the stem now showing signs of decay, a portion was cut from its lower part, and further manifested the reproductive power of the stem; for three heads were produced from the upper end of the piece cut off, and four from the lower end of the upper piece which had seemed to be decaying. In 550 days this specimen had grown 22 heads.

Now, I cannot but think that we have, in these instances of gradual recovery from the effects of injury, a type of that gradual return to the perfect form and composition which are noticed in the higher animals. Our theory of the process of nutrition leads us to believe that in the constant mutation of particles in nutrition, those elements of the blood, or of any structure that have been altered by disease, in due time degenerate or die, and are cast off or absorbed, and that those which next succeed to them partake, through the assimilative force, of the same morbid character; but that, every time of renewal, the new particles, under the influence of the germ-power, approach a step nearer to the perfect state. Thus, as it were, each generation of new particles is more nearly perfect, till all the effects of the injury or the disease are quite obliterated. Surely, in the gradual recovery of perfection by these polypes, we have an apt illustration of the theory,—one which almost proves its justice.

The power of reconstructing a whole and perfect body, by the development of a fragment, is probably limited to the species that can propagate by spontaneous fission or gemmation, or that increase their size, as some of the Anellata do, by the successive addition of rings that are developed after the manner of gemmules from those that precede them. Where this power is not possessed, there, whatever be the position of the species in the animal scale, the reparative power appears to be limited to the reproduction of lost members,—as legs, claws, a part of the body, the head, an eye, the tail, and the like; yet, within this limit, the rule seems again to hold good,—that the amount of reparative power is in an inverse ratio to that of the development, or change of structure and mode of life, through which the animal has passed in its attainment of perfection, or on its way thitherward.

Here, however, even more than in the former cases, we need, not perhaps more experiments, but experiments on a larger number of species. It appears generally true, that the species whose development to the perfect state is comparatively simple and direct, have great reparative powers; while many, at least, of those in which the development is with such great changes of form, structure, and mode of life, as may be called metamorphosis, retain in their perfect state, scarce any power for the repair of losses. Yet we want more instances of this; and especially, it were to be wished that we had the results of experiments upon the lowest animals that pass through such metamorphoses, e. g. on the Hydra tuba, not only on its hydra state, but in all the changes that succeed, till it attains its complete Medusa form.

In the absence of such evidence as experiments of this kind might furnish the best examples of this rule are furnished by the experiments of Mr. Newport. They show that among the insects, the reparative power, in the complete state, is limited to the orders in which that state is attained by a comparatively simple and direct course of development—as the Myriapoda and Phasmidæ, and some of the Orthoptera. These can reproduce their antennæ, and their legs, after removal or mutilation; but their power of reproduction diminishes as their development increases,—and, even in the Myriapoda, whose highest development scarcely carries their external form beyond that of the larvæ of the more perfect insects,—even in these such reparative power apparently ceases, when, after the last casting of their integuments, their development is completed.

In the higher hexapod insects, such reproduction has been seen in only the larval state,—none of them, in its perfect state, can reproduce an antenna, or any other member. The Myriapoda, then, are, in their reparative power, equal to the larvæ of the higher insects, and nearly all the germ-power which these manifest, appears to be exhausted in the two latter metamorphosis.

The case is the stronger, as illustrating the expenditure of germ-power in metamorphoses, when the higher insects are compared with the arachnida; for in these, which attain their perfect state through more direct development, the reparative power remains equal to the reproduction of limbs and antennæ. A yet stronger contrast is presented between the higher insects and the several species of salamander in which so profuse a reproduction of the limbs has been observed; for though they be so much higher in the scale of animal life, yet the amount of change in external form and habits of life through which they pass in their development from the embryo to the perfect state, appears less than that accomplished in the metamorphoses of insects.

Many instances, besides those which I have cited, appear to support this rule, that the reparative power in each perfect species, whether it be higher or lower in the scale, is in an inverse proportion to the amount of change through which it has passed in its development from the embryonic to the perfect state. And the deduction we may make from them is, that the power for development from the embryo is identical with that exercised for the restoration from injuries; in other words, that the power is the same by which perfection is first achieved, and by which, when lost, it is recovered.

This is, again, generally confirmed in the instances of the vertebrata; but of the repair of these, or at least in the highest of them, I shall have to speak so exclusively in the future lectures, that I will now only say that, in the highest vertebrata, and in man, a true reproduction after loss or injury seems limited to three classes of parts:—

1. To those which are formed entirely by nutritive repetition,—such as the blood and the epithelia. 2. To those which are of lowest organization, and, (which seems of more importance) of lowest chemical character, as the gelatinous tissues, the cellular and tendinous, and the bones. 3. To those which are inserted in other tissues, not as essential to their structure, but as accessories, as connecting or incorporating them with the other structures of vegetative or animal life,—such as nerve-fibres and blood-vessels.

With these exceptions, injuries or losses in the human body are capable of no more than repair, in its more limited sense; i. e., in the place of what is lost, some lowly organized tissue is formed, which fills up the breach, and suffices for the maintenance of a less perfect life.

Let me express my belief that, if ever we are to escape from the obscurities and uncertainties of our art, it must be through the study of those highest laws of our science, which are expressed in the simplest terms in the lives of the lowest orders of creation. It was in the search after the mysteries,—that is, after the unknown highest laws—of generation, that the first glance was gained of the largest truth in physiology—the truth of the development of ova through partition and multiplication of the embryo-cells. So may the study of the repair of injuries sustained by the lowest polypes lead us to the clearer knowledge of that law, in reliance upon which alone we dare to practise our profession,—the law that lost perfection may be recovered by the operation of the power by which it was once achieved. Already, in the facts that I have quoted from Sir Graham Dalyell, we seem to have the foreshadowing of the facts through which the discovery may be made.

And let us not overlook those admirable provisions which we may find in the lives of all that breathe, against injuries that, but for these provisions, would too often bring them to their end before their appointed time, or leave them mutilated to complete a painful and imperfect life. We are

not likely to undervalue, or lose sight of, the design of all such provisions for our own welfare. But we may better appreciate these if we regard them as only of the same kind as those more abundantly supplied to creatures whom we are apt to think insignificant: indeed, so abundantly that, as if with a consciousness of the facility of repair, self-mutilation is commonly resorted to for the preservation of life. When the Ophiura, or any of the brittle star-fishes, break themselves to fragments, and disappoint the grasp of the anxious naturalist, they probably only repeat what they are instinctively taught to do, that they may elude the jaws of their more ravenous enemies. But death would be better than such mutilation, if their rays could not be reproduced almost as easily as they can be rejected. The experimentalist, too, who cuts off one or the other end of any of the Anellata, perhaps only puts them to a necessity to which they are liable from the attacks of their carnivorous neighbours. Almost defenceless, and so easily mutilated, their condition, were it not for their faculty of reproduction, might be more deplorable than that of any other creature; and even their existence as a species might have been endangered long ago. It would almost seem as if the species that have least means of escape or defence from mutilation were those on which the most ample power of repair has been bestowed;—an admirable instance, if it be only generally true, of the beneficence that has provided for the welfare of even the least (as we call them) of the living world, with as much care as if they were the sole objects of the Divine regard.

[In proceeding to speak of the healing of divided soft parts, Mr. Paget observes:]

Recent improvements in surgery have shown how right Mr. Hunter was, when, in the very beginning of his discussion concerning the healing of injuries, he points out, as a fundamental principle, the difference between those forms of injuries of which one is subcutaneous, the other open to the air. He says, "The injuries done to sound parts, I shall divide into two sorts, according to the effects of the accident. The *first* kind consists of those in which the injured parts do not communicate externally, as concussions of the whole body, or of particular parts, strains, bruises, and simple fractures, which form a large division. The *second* consists of those which have an external communication, comprehending wounds of all kinds, and compound fractures." And then he says "The injuries of the first division, in which the parts do not communicate externally, seldom inflame; while those of the second, commonly both inflame and suppurate."

In these sentences Mr. Hunter has embodied the principle on which is founded the whole practice of subcutaneous surgery; a principle, of which, indeed, it seems hardly possible to exaggerate the importance. For of the two injuries inflicted in a wound, the mechanical disturbance of the parts, and the exposure to the air of those that were covered, the exposure, if continued, is the worse. Both are apt to excite inflammation: but the exposure excites it most certainly, and in the worse form; i.e., in the form which most delays the process of repair, and which is most apt to endanger life. Abundant instances of this are shown in the difference between a simple and a compound fracture, though the former may have been produced by the greater violence; or, between a simple fracture, even with much violence, extending into a joint, and an open wound, never so gently made into one. Or, for parallel instances, one may cite the rarity of suppurations after even extensive ecchymoses, and their general occurrence when wounds are left open.

[Mr. Paget states, as the probable ground of this difference, that the materials produced for the repair of open wounds are either different, or do not develop themselves in the same manner, as those for the repair of subcutaneous ones. Before speaking, however, of the materials of repair, he states that the healing of open wounds may be accomplished in five different modes, namely:]

1. By immediate union; 2. By primary adhesion; 3. By granulations;

4. By secondary adhesions, or the union of granulations; 5. By healing under a scab. The repair of subcutaneous wounds may be effected by immediate union, but is generally accomplished by connection, or the formation of bonds of union between the divided and retracted parts. Very rarely it is effected by means of granulations without suppuration.

[Mr. Paget thinks that Mr. Hunter was in error in supposing that union by the first intention is effected by the organization of the fibrine of the blood effused between the surfaces of the injured part. He gives the following account of the way in which blood thus effused may be disposed of:]

In my last course of lectures, I stated the evidence for believing that masses of effused, or stagnant and coagulated blood may be organized; *i.e.*, may assume the characters of a tissue, and may coalesce with the adjacent parts and become vascular. Among these evidences, several cases were mentioned in which such organization of the blood had been distinctly traced; they included cases of blood effused in serous sacs, especially in the arachnoid, clots in veins organizing into fibrous cords, or, after less organization, degenerating into phlebolites, clots organizing into tumours in the heart and arteries, and the clots so organized above ligatures on arteries as to form part of the fibrous cord, by which the obliterated artery is replaced. These last cases afforded the most conclusive evidence, because they had been very carefully investigated in a series of experiments and microscopic observations, by Dr. Zwicky. In the course of last year I had the opportunity of examining a specimen which, more fully than any other I had seen, confirmed his account of the mode in which blood-clots become organized. It supplied, too, some facts which appear to me important to the present subject.

The specimen was obtained from an insane person, by my friend Mr. Holmes Coote. A thin layer of pale blood-coloured and ruddy membrane lined the whole internal surface of the cerebral dura mater, and adhered close to it. Its colour, the existence of patches of blood-clot imbedded in it, and all its other characters, satisfactorily proved that it had been a thin clot of blood,—an example of such as are effused in apoplexy of the cerebral membranes, of such as Mr. Prescott Hewett has so fully described in his paper in the Medico-Chirurgical Transactions. Numerous small vessels could be seen passing from the dura mater into this clot-membrane. The arrangement of blood-vessels bears a close resemblance, but, perhaps, more in its irregularity than in any positive characters or plan, to that which exists in false membrane formed of organized lymph; but the vessels were, I think, generally larger.

Such were the vessels of this organized clot. Its minute characters which are of peculiar interest because of their resemblance to those observed in the material that is commonly formed in the repair of subcutaneous injuries. In the substance of what else appeared like a filamentous clot of fibrine, sprinkled over with minute molecules, the addition of acetic acid brought into view corpuscles like nuclei, or cytoblasts, very elongated, attenuated, and, in some instances, like short strips of flat fibre. Of course, such corpuscles are not to be found in any ordinary clot of fibrine; neither are they seen in any stage of the organization of such lymph, as is commonly effused in inflammation; but they exactly resemble such as may be found in certain examples of rudimental cellular tissue, and (among these) in the material for the repair of subcutaneous injuries. In short, the minute structure of this clot now organized was an example of what I shall have often to refer to under the name of "nucleated blastema."

With such evidence as this of the organization of a thin layer of blood-clot, and of the development of its fibrine being apparently identical with that of the material commonly formed for the repair of subcutaneous injuries, it was with much surprise that I found that extravasated blood can commonly have no share at all in the repair of injuries.

We have sufficient proof that extravasated blood is not necessary for union by the first intention, or for any other mode of repair, in the sim-

ple fact that where the repair is best, and the material for it most ample, no blood is so extravasated as to form a clot that could be organized.

But, though this may be the usual case, the question still remains—When blood is effused between wounded surfaces, and clots there, how are the clots disposed of? For often, though not generally, such clots are found in wounds, or between the ends of a broken bone, or a divided tendon when an artery by its side is cut; and in most operation-wounds, one sees blood left on them, or flowing on their surfaces, after they are done up. How, then, is this blood disposed of?

Ejection and absorption are, doubtless, the usual means by which blood in injuries is disposed of; yet I feel nearly sure it may in some instances become organized, and form part of the reparative material.

On the whole, I believe we may thus conclude concerning the part that blood, when it is extravasated, takes in the repair of injuries:—

1. It is neither necessary nor advantageous to any mode of healing. 2. A large clot, at all exposed to the air, irritates and is ejected. 3. In more favourable conditions the effused blood becomes enclosed in the accumulating reparative material; and while this is organizing, the blood is absorbed; and lastly, it is probable that the blood may be organized and form part of the reparative material; but even in this case it probably retards the healing of the injury.

[Mr. Paget next proceeds to speak of the characters of coagulable lymph. He says,]

Regarding its vital properties, the essential character of the coaguable lymph is its tendency to develope itself,—a tendency which it has of its own properties. It thus displays itself as a plasma or blastema—a fluid to be classed with those others that manifest the capacity to assume organic structure,—such as the lymph and chyle that develope themselves to blood; the semen, which, at first fluid, gradually developes itself into more and more complex structures.

The natural tendency of coagulable lymph is to develope itself into the fibrous, or the common fibro-cellular or connective, tissue,—the lowest form of vascular tissue, and the structure which, in nearly all cases in man, constitutes the bond by which disunited parts are again joined. This is commonly formed, whatever be the tissue upon which the lymph is placed, whether containing cellular tissue in its natural structure or not. This, therefore, we may regard as the common or general tendency of lymph; but in certain cases the development of lymph passes beyond this form, or deviates from it into another direction, in adaptation to the special necessity of the part to be repaired. Thus, for the repair of bone, the lymph may proceed a certain distance towards the development of fibrous tissue, as if for a common healing; but this fibrous tissue may next ossify; or not forming fibrous tissue at all, the lymph may proceed at once to the formation of a nearly perfect cartilage, and this may ossify.

In general, moreover, the character of the connective tissue that is formed in repair is adapted to that of the parts that it unites. The bond for the union of a tendon is much tougher than that for a common scar in the skin; that in the skin is tougher and less pliant than that in the mucous membrane, and so on.

In its first production, the reparative material is like the lymph of inflamed serous membranes,—at least no characteristic difference between them is yet known; neither are there yet any observations to show a difference in the characters of the materials effused for the repair of injuries of different parts, or in different circumstances; and yet such a difference, in even the original characters of the lymph, is indicated by the fact that in different circumstances it may proceed to the same end—the formation of fibrous tissue—by two different ways of development. The lymph, or new material, which is produced for the repair of open wounds, generally developes itself into fibro-cellular tissue through nucleated cells; that formed for the healing of subcutaneous wounds as generally developes itself into the same tissue through the medium of nucleated blastema.

Now both these are repetitions of natural modes of development of the same forms of tissue. In the embryo and fœtus you may trace very well the development of subcutaneous cellular tissue through nucleated cells, and that of tendons and other formed fibro-cellular or fibrous tissues through nucleated blastema.

It must not appear an objection that there should be two modes of development to the same perfect tissue; for this is usual, and has been observed in nearly all the tissues. I spoke of it last year in relation to the development of the blood-corpuscles, of which a first set are formed from part of the embryo-cells that form the germinal area, or the whole body of the embryo, and the second set are formed exclusively from the corpuscles of lymph and chyle; and so it is with the cartilage, the muscular, and other tissues that are formed in the earliest periods of embryo-life. At first they are developed from some of the embryo-cells; yet in later life, no such cells are seen among them, but others appropriate to them, and of widely different form. So also in the bones, which at first are developed through cartilage, but in their subsequent growth are increased by ossification of fibrous tissue; and in the repair of which we shall find even more numerous modifications of these different developments.

The general truth appears to be (as already stated) that the material of repair for subcutaneous wounds is developed into cellular tissue through the formation of nucleated blastema; whilst that for repair by primary adhesions, and by granulation, is developed into the same through nucleated cells. Now, since both these modes of development are, as I have already said, imitations of natural methods, we might suppose that they are therefore both alike natural or healthy processes,—both alike independent of inflammation,—alike sure to pass to their proposed end, safe from disease or degeneration.

But, if we consider also the morbid conditions in which these two methods of development of cellular or fibrous tissue occur, then we can see that the development through cells is characteristic of inflammatory process—at least, as far as the origin of the cells is concerned. For, of such cells, in various stages of development, are formed not only long-suppurating granulations, but also the walls of abscesses, inflammatory infiltrations, producing succulence, indurations, and thickenings of soft parts; the lymph produced in inflammation of serous membranes, which organizes itself into false membranes.

On the other hand, the development of cellular tissue through nucleated blastema, is, in morbid processes, observed in instances in which there are commonly no signs of inflammation,—as e. g., in warts and condylomata, in the simple fibro-cellular tumours of the subcutaneous tissue, in nasal polypi, in organizing clots of blood.

These instances, then, may enable us to conclude respecting the existence or non-existence of inflammation in the healing of injuries. The material of repair in union by primary adhesion and granulations is the same, in appearance and mode of development, as we find produced in other conditions which all are agreed to call inflammatory. But, in the healing of subcutaneous wounds, we find a different material of repair, which resembles, in both appearance and mode of development, that which we find forming growths whose production is not attended with any signs of inflammation. On these grounds, therefore,—and they are corroborated by the appearances of the injured parts during the process of healing,—we are justified in holding, generally, that inflammation ensues in the healing by adhesion and by granulations, but does not exist in the healing of subcutaneous wounds.

Although inflammation may be deemed necessary for the production of the lymph that may form adhesions or granulations, yet we have no evidence that the continuance of inflammation is necessary for the organization of the lymph. Rather, the persistence of inflammation seems to hinder the organization of the lymph, to keep it in a low state of devel-

opment, or to favour its degeneration. Thus, to name but one example, granulations over an irritating body suppurate abundantly, and remain for years unhealed;—that is, they are imperfectly organized; they stop short of their development into the cellular tissue and cuticle proper to cicatrices, or degenerate into pus.

I may also add, that, although I have described the two modes of development of fibro-cellular or fibrous tissue for the healing of wounds as if they were always as separate as they are distinct, yet they may co-exist, and probably often do so. In the repair of many wounds, the two materials—namely, that which is to be developed through nucleated cells, and that whose progress is to be through nucleated blastema—may be mixed. Thus, in subcutaneous wounds and injuries—as, for example, in the case of divided tendons,—the first consequence of the mechanical violence is the effusion of a common inflammatory product, which makes the cellular tissue œdematous, and organizes itself into nucleated cells. Thus you find the space between the retracted parts for about two days. But, then, the more proper and purer material of repair is produced: and this, increasing in an inverse proportion to the degree of inflammation, soon overwhelms the former product of inflammation, and is developed into the nucleated blastema. Still, for many days, traces of the inflammatory product may be discerned mingled with the blastema, confusing its appearance, but I believe, finally organizing with it into the bond of union. So, in divided muscles, and in simple fractures, the inflammatory exudation, produced in consequence of the first violence, appears to mingle and develope itself with the more proper material of repair; but they bear an inverse proportion to one another, and the more manifest the signs of inflammation, the less is the quantity of the proper reparative material, and the slower, in the end, the process of repair.

On the other hand, I think that in the ordinary healing of open wounds, which are soon brought together by sutures, or other appropriate means, there may be less than the commonly observed formation of nucleated cells, and some of the reparative material may be developed through the nucleated blastema. Or, when the materials are not mingled at the same spot, yet, in one wound, different parts may be healed by the organization of one or other material, according to the degree of inflammation that is in each part present during the production of the lymph. But all these things need further inquiry. *Med. Gaz. June* 22, 1849, *p.* 1064.

[We regret that our limits will not permit us to quote Mr. Paget's most interesting description of the five modes (before enumerated) in which open wounds may heal. We proceed to the subject of the *union of fractures*. The descriptions usually given in surgical works of the mode on which fractures are united, are derived mainly from experiments on animals; but Mr. Haget states, the mode of union in man differs considerably from that in animals. He says:]

It is probable, that the difference between the modes in which fractures are commonly united in man and other animals respectively, depends in part on the movement to which the fragments are subjected in the latter,—but probably, in part also on the greater readiness with which, under all circumstances, bone is formed in the animals lower than man.

Since the above was written, I have examined many more specimens, and find the same rule true—namely, that in the ordinary repairs of simple fractures in the human subject, the reparative material, or callus, is merely inlaid between the several fragments; it fills up the interspaces between them and the angles at which one fragment overhangs another; but it does not encircle and ensheath them, in the manner implied in the description of provisional callus; nor is it in any considerable quantity, if at all, deposited either beneath the periosteum or within the medullary tube. In birds, dogs, and other ordinary subjects of experiments, the formation of a provisional, or, as it may, perhaps, be better called an *ensheathing* callus, is usual.

For fractures in the human subject, the evidence that union is accomplished by the reparative material being placed between, not within and around the fragments—i.e., as an intermediate, not an ensheathing callus—this evidence may be obtained by the examination of such fractures even long after they are completely healed. In as many as you like to examine you will find the new bone formed exclusively between the fragments. Whether they were in apposition, or nearly so, or wide apart, still there is no appearance of new bone being formed on the outer side of any fragment,—I mean on that side which is turned away from the other fragments. And this is the case even in those instances in which there is so much displacement of the fragments, and so much distortion, that we can hardly suppose the repair to have proceeded very quietly. Neither in any of these do you find new bone within the medullary tube. It may be objected by some to these specimens, that the fragments were once ensheathed and blocked up with callus, and that it has been since absorbed. But this is not probable, seeing that in many cases there remain on the outer surfaces of the fragments, certain marks of their original form and slight irregularities. In one of the specimens, we have traces of the healing of a long fissure, which appears now as a sunken groove, making it nearly certain that no new bone was formed over it. In another, is a detached piece of the wall of a femur turned quite round, so that its periosteal surface lies on the periosteal surface of the principal fragment: yet on the outer surface of this piece (which was the inner surface of its wall) the thin plates forming the boundary of the medulary tube are still unchanged.

Such appears to be the natural mode in which the reparative material is deposited for the union of fractures of human bones. And, regarding the particular position which it may in each case occupy, I do not know that it can be more exactly described, than by saying, that it is deposited where it is most wanted for the strengthening of the bone,—so that, whatever would be the weak part of the bone, if unhealed, there is the new material placed, in quantity as well as in position just adapted to the exigencies of the case, and restoring, as much as may be, the original condition and capacities of the bone.

The exceptions to the rule of difference in the repair of human bones and those of animals, confirm it as thus explained; for the only bones in which, in the human subject, a provisional callus is generally or naturally formed, for the repair of fractures, are the ribs. In cases of fractured ribs one may see, indeed, a very close imitation of that which is described, from experiments on animals, as the ordinary mode of union. The provisional callus is well formed under the periosteum, and encircles, like a broad ring or ferrule, both the fragments, and may almost completely ossify before their union is accomplished, or even apparently begun.

Another bone for the repair of which, but more rarely, callus is formed around the fragments, is the clavicle; and the best specimen in which I have seen it is one in which the fracture was not detected, and the fragments were allowed to move on one another, till the patient died twelve weeks after the injury.

Except in such cases as these of fractures not kept at rest I doubt whether a natural formation of callus beneath the periosteum, or within the medullary tube of a human bone, would ever occur. In disease, the occurrence is not so rare; for, when the natural process of union fails altogether, the loose ends of the bones may be inclosed within a case formed wholly or in part of bone; or an imitation of callus may be made by a gradual morbid accumulation of bone around a fracture, even after its natural union.

But I think the comparative restlessness of animals is not alone sufficient to account for all the difference in the processes. The remainder may be ascribed to their greater tendency, in all circumstances, to the formation of new bone. Not in fractures alone, but in necrosis this is shown. It is very rarely that such quantities of new bone are formed in even children,

as are commonly produced after necrosis of the shafts of bones in dogs or other animals; nor is there in the human subject any such filling up of the cavities from which superficial sequestra have been separated, as the experiments of Mr. Hunter showed, after such exfoliations from the metatarsal bones of asses.

Other examples might be quoted, but these may suffice to show that, after injuries, new bone is formed more abundantly in animals than in man. And I hope enough has been said to prove that the generally-received account of provisional callus, and other parts of the healing of fractures, is an exaggeration of what occurs in man. If it be asked what it is that is felt like a callus after fractures, I would say that, in such cases as I could examine after death, I have usually found that the overlapping ends of the bone, being both at once grasped, had been taken for the enlargement of callus. Sometimes, also, the thickening and induration of the parts around the fracture infiltrated with serous and bloody fluid, or with lymph, have been mistaken for it.

The next point on which I proposed to speak, concerned the structure of the reparative material thus deposited within the fragments.

It will appear that the peripheral growth and ordinary maintenance of all bones, after the ossification of their primordial, and for a time growing, cartilage is completed, is effected by the ossification of membranous or fibrous tissue. I would call it fibrous rather than membranous, because in some instances, as the patella and other sesamoid bones, and in the union of fractures, and the growth of some tumours, a mass of tissue, rather than a membrane, ossifies.

The changes that ensue directly after a simple fracture are in accordance with what I have already described in relation to the general repair of injuries. A period of rest follows the injury; and for a week or ten days no change may be observed, at least in fractures in the adult long bones: and here, at once, is a point of contrast with the consequences of fracture in the lower animals; for specimens, showing the consequences of fracture of the tibia in rabbits, six, ten, and fourteen days after the injury, prove that a perfect cartilaginous callus is in them formed in a shorter time than would elapse before the commencement of any distinct reparative process in man.

Especially, for contrast, one may notice the unchanged state of the periosteum round the broken human bones: for this, in ordinary cases, is neither raised by deposit beneath it, nor in any way altered—except, it may be, by slight thickening—during the whole healing of the fracture.

The first new material produced after simple fracture consists of the lymph and serum, which are effused in consequence of the inflammation that the violence of the injury excites. But these, as in the repair of other subcutaneous injuries, are presently overwhelmed and enclosed (as the effused blood also is) by the more proper reparative material. In a plan, wherein one cannot overlook the evidences of particular design and of appropriate purpose, it is inlaid between the fragments, wherever, when the limb comes to be used, the most new bone will be necessary for its strength. Thus, it may take the various forms of groins and buttresses, arches, beams, or bridges, according to the mode and degree of displacement of the fragments.

Thus placed, its development proceeds. I cannot tell the conditions which will determine, in each case, the route of development towards bone that the new material will take; nor whether the differences that may be observed are to be ascribed to the seat or nature of the injury, or to the condition of the patient. All these things have yet to be determined; and I believe that years of patient and well-directed investigation will be requisite for them. I can do little more than point out the modes in which the ossification may be accomplished.

And, first, it may be accomplished through perfect fibrous tissue. Thus I found it in a case of fracture of the lower part of the femur, and in a

fracture of a radius, thus, too, I think, whatever new bone is formed after fractures of the skull, is developed; and thus, too, one may find, in the neighbourhood of fractures and other injuries of bone, ossifications of inter-osseous fibrous membranes, and of the tissue of the periosteum, or just external to it.

But, secondly, the bone may be formed by ossification of the fibrous tissue in a rudimental state. And this rudimental state may be that of either nucleated cells or nucleated blastema. Through nucleated cells, as the embryo-forms of fibrous tissue, bone is formed when granulations or inflammatory effusions ossify. The process may be often seen in the union of compound fractures, or of simple ones when much inflammation has been excited; but, best of all, the ossification of nucleated *cells*, in granulations, may be observed when bone is formed in the mushroom-shaped mass of granulations that is protruded through the medullary canal of a bone sawn across in an amputation. In all these cases there appears to be a direct transformation into bone, without the intervention of either cartilage or perfect fibrous tissue.

The ossification of nucleated blastema, such as I have described as a rudimental form of fibrous tissue, may also be seen in simple fractures; and my impression is, that it is the ordinary mode of ossification in simple fractures of long bones that unite well and quickly. In such a case, in a fracture of the tibia, I found, in long-continued examinations, that the bone is formed without any intermediate state of cartilage; a finely and very closely granular osseous deposit taking place in the blastema, and gradually accumulating so as to form the delicate yet dense lamellæ of fine cancellous tissue. The nuclei of the blastema appeared to be enclosed in the new-forming bone, and I thought I could trace that they became the bone-corpuscles; but I could not be sure of this, nor, indeed, could I, in either this or any other examination, satisfy myself that the origin of these corpuscles is in any structures previously existing in the soft or unossified tissue. Their first appearance in the forming new bone is too obscure, I think, to warrant any positive opinion; neither could I trace how the nucleated blastema or other structure which is included within the new cancelli is transformed into the latter and more perfect medulla; only, one sees fatty matter gradually accumulating.

Such are instances of the ossifications, for the repair of fractures, that may be accomplished through fibrous tissue; and all these are possible without the intervention of the smallest portion of cartilage.

But perfect cartilage, with its characteristic homogeneous intercellular substance, and its well-formed cells, and all the characters of the purest fœtal cartilage, may be produced. Through the ossification of such cartilage, Miescher and Voetsch and others, describe the repair of fractures as accomplished in dogs, pigeons, and other animals. I have not yet found the very same process in the human subject, but I should think it would occur in favourable instances of simple fractures in children. In youths and adults I have found only varieties of fibrous cartilage; but these have presented numerous gradations of structure, from the fibrous towards the perfect cartilaginous structure. In different specimens, or sometimes even in different parts of the same, the reparative material may display—in one, fibrous tissue, with a few imbedded corpuscles, like the large nearly round nuclei of cartilage cells; in another, a less appearance of fibrous structure, with more abundant nucleated cells, having all the characters of true cartilage cells; and in a third, a yet more nearly perfect cartilage. Through any of these structures, and apparently by the same method through all, the reparative new bone may be formed. It may be formed, first, where the reparative material is in contact with the old bone, and thence extending, it may seem as if it grew from the old bone; or it may be formed in the new material in detached centres of ossification, from which it may extend through the intervening tissues, and connect itself with the old bone.

The new bone, through whatever mode it be formed, appears to acquire quickly its proper microscopic characters. Its corpuscles, being first of simple round or oval shape, and then becoming jagged at their edges, subsequently acquire their canals, which appear to be gradually hollowed out in the preformed bone as minute channels communicating with one or more of the corpuscles. The laminated canals for blood-vessels, I think, are later formed. At first, all the new bone forms a minutely cancellous structure, much like that of the fœtal bones in their first construction; but this gradually assimilates itself to the structure of the bones that it repairs, while its outer portions assume a compact laminated structure, and its inner or central portions acquire wider cancellous spaces and a more perfect medulla. But, in regard to many of these later changes in the bonds of union of fractures, there are so many varieties in adaptation to the peculiarities of the cases, that no general account of them can be rendered. Only, specimens and drawings; one and all, show the most striking evidences of design in the adaptation of the reparative process to the particular exigencies of each case; so that it might be said, with complete truth, of every instance, that whatever is necessary,—whatever may best, under the circumstances, repair the damage,—that is done.

Let me in conclusion, remind you how this account of the ossification of fibrous tissue, in the repair of fractures, illustrates the most usual condition of fractures of which the repair is incomplete. They are united by ligament —that is, by fibrous tissue; to the formation of this tissue the process goes on naturally, but at this point it is arrested: the fibrous tissue does not ossify, and its fibrous state, imperfect for the purpose of repair, is perpetuated.

Med. Gaz., July 20, 1849, p. 168.

[Mr. Paget gives the following as the conclusion to which he has arrived with regard to the *share which the inflammatory process takes in the repair of parts after injury*:]

1. That in the healing of a wound by immediate union, inflammation forms no necessary part of the process; rather, that its presence always hinders, and may completely prevent it. The healing by immediate union should be a simple re-joining of the several parts, without the production of any new material; and in the same proportion as, in any case, inflammatory matter is effused, either in or between the wounded parts, in that proportion, does the healing deviate from the true and best process of immediate union.

2. For subcutaneous wounds and injuries, as in divided tendons, simple fractures, and the like, nearly the same may be said. Inflammation is excited by the local injury, but its products form no necessary part of the material of repair; rather, the more abundant they are, the more acute the inflammation is, and the longer it continues, the less speedy and the less perfect is the process of repair. For here the necessary or best reparative material is a substance which, both in its origin and its development, declares its non-inflammatory nature; a substance which is produced without the signs of co-existent inflammation, and of which the development is different from that of the true inflammatory products. And this, which is most evident in the case of the healing of subcutaneous injuries by bonds of connection, is probably equally true in the case of subcutaneous granulations.

But 3dly. In the healing of a wound by primary adhesion, or by open granulations, we have evidence of a process of inflammation, not only in the presence of its ordinary signs in a degree generally proportioned to the severity and extent of the injury, but in the character and mode of development of the new materials that are formed for the repair. For these materials are, in all appearance identical with those of such effusions of lymph as all are agreed to consider the effects of inflammation.

Still, 4thly, in these cases we have evidences that the inflammatory process is necessary for no more than the production of the organizable matter, —and, in the case of granulations, for the production of only the first portions

of it. The right formation of the cells, and yet more evidently, their higher organization into cellular tissue and cartilage, ensue only while the signs of inflammation are absent. They are manifestly hindered or prevented when signs of inflammation are distinctly present, or when its existence may be suspected in consequence of the presence of some irritation, as a foreign body, dead bone, or the like. The continuance of suppuration during the process of healing is no proof of the continuance of inflammation, if the account that I have given of pus be true.

In these modes of healing, therefore, we may conclude that inflammation is only partially, and at one period requisite; and that, in regard to its requisite degree, the least amount with which an effusion of lymph is possible is that which is most favourable to repair.

Lastly, for the process of healing by scabbing, the absence of inflammation appears to be essential; indeed, the liability of our own tissues to the inflammatory process, and to the continued effusion that it produces, appears to be that which prevents their injuries from being healed as easily and surely, by the scabbing process, as nearly all open wounds are in animals.

Such may be regarded as the relations of the reparative process to that of inflammation, as it is commonly understood; but, I repeat, such a comparison can be made only for the sake of deference to the general state of opinion in matters of surgical pathology. In truth, we know less of inflammation than of the reparative process. *Med. Gaz., July 27, 1849, p. 138.*

151.—DESCRIPTION OF A GALVANIC APPARATUS FOR APPLYING COUNTER-IRRITATION.—By Dr. T. Smith, late Physician to the Leeds Public Dispensary, and to the Cheltenham General Hospital.

[Dr. Smith recommends the following mode of using galvanism for the formation of an issue. It is a modification of that some time ago described by Dr. G. Bird. (See Retrospect, Vol. XVI., p. 293.) Dr. Smith says:]

A piece of perforated zinc is fastened or rivetted to a piece of platinized silver, or, what will do equally as well, and which I generally use, a sixpence, shilling, or half-crown, according to the size required. The apparatus thus prepared is to be applied with the zinc surface next to the body, the silver being uppermost; over this I place a piece of spongio-piline, previously moistened in salt and water, and retain the whole in close apposition to the skin by means of a few strips of adhesive plaster. At the expiration of every twelve hours, the battery should be removed and washed in salt and water, and then reapplied as before. At the end of twelve days, a deep white eschar is formed, from the action of the chloride of zinc. This may easily be detached, or allowed to slough out of itself, which generally happens about the fifteenth day, leaving a healthy looking sore. By reversing the galvanic apparatus, that is, applying the silvered surface to the wound, it will be found to heal up quickly; or it may be made to keep up a continuous discharge, by introducing split peas into the opening, or by dressing it night and morning with savine cerate. Where, however, time is an object, and it is desirable quickly to induce counter-irritation, this may easily and speedily be effected by first removing the cuticle either by means of liquor ammoniæ fortissimus, or of acetum cantharidis, and then applying the battery to the denuded surface, and afterwards proceeding as in the former case. In this manner the same effects are produced in from four to six days, as would require twelve days by the other method. If the latter plan be adopted, it is not uncommon for the patient to complain of a gnawing pain in the part towards the evening of the third day, which, if not relieved, makes him restless and uncomfortable; a mild opiate, administered at bed-time, has generally had the effect of soothing the irritation, and preventing its future occurrence. In delicate females where it is desirable not to create more pain than is absolutely necessary for the induction of counter-

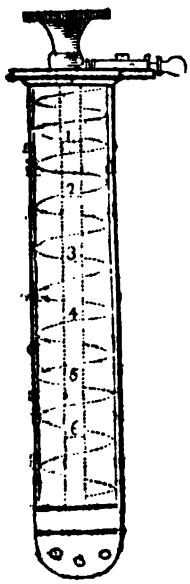
irritation, the first plan is decidedly preferable. I have observed, on three occasions, where the idiosyncracy of the patient had previously rendered the exhibition of opium or its preparations inadmissible, that during the action of the battery they have produced the most tranquilizing effects. Acting upon this inference, would it not be well in such constitutions as are known to be susceptible to injurious impressions from a dose of any opiate, previously to irritate the cuticular surface by electricity or galvanism.

London Journal of Medicine, Sept. 1849, *p.* 396.

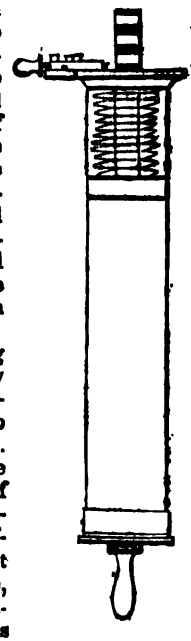
252.—ACCOUNT OF A NEW SPRING SYRINGE.—By T. H. Wakley, Esq., Surgeon to the Royal Free Hospital.

[In order to meet the difficulties which patients, both male and female, experience in the use of the common syringe, Mr. Wakley has had some made with a spiral spring attached to the piston within the cylinder, and having a trigger and spring catch at the head of the instrument. Mr. W. says:]

The annexed engravings will furnish a more correct representation of the contrivance than any verbal explanation that I could offer. It will be seen that the shaft or rod of the piston is *graduated*, and that it thus enables either the surgeon or the patient to determine the exact quantity of injection which is used at one time.



The instrument being charged with fluid and held with either hand, the *trigger* is at once placed at the disposal of a single finger. At the same time another finger, on being pressed against the side of the shaft or rod of the piston, can regulate the force which the spring shall exercise while discharging the contents of the syringe. The spring is set in action, and the discharge effected, by simply depressing the trigger. When the full force of the spring is required, pressure with a finger on the shaft of the piston must be avoided.



The spring syringe which I am using has been manufactured for me by Messrs. Spratt & Turner, of Titchbourne-street, and I have found it to be extremely useful and effective. The patients of both sexes who have used it, speak strongly in favour of the facility with which the spring syringe may be employed. Females suffering under uterine maladies state that they can use it with the utmost ease, and with much advantage. One patient remarked that the spring was better than a "third hand." Any patient having two hands cannot experience the slightest difficulty, so far as the mere manual effort is concerned, in using the instrument.

The spring in order to protect it from corrosion, may be made of platina wire; but steel spiral springs, as ordinarily constructed will be found amply sufficient for all the usual purposes. The cylinder may consist of pewter or any other appropriate metal.

Spring syringes, of all sizes, and for all the occasions in which ordinary syringes are used, may be manufactured in the form and manner which have been described.

Lancet, June 23, 1849, *p.* 694.

153.—ON THE CONNECTION OF MUSCULAR ACTION AND ELECTRICITY.—By Baron Humboldt.

At the last meeting of the Academy of Sciences, M. Arago read the following notes from the illustrious Humboldt relative to the above interesting subject:—

"Neither the jeers of certain editors on German credulity, nor the negative results obtained by two of our first natural philosophers, have changed my convictions regarding the influence of muscular action on the movement and direction of the galvanic needle. We have recently repeated our experiments at M. Reymond's, and I invited M. Mitscherlich to attend, knowing his great dexterity in the management of delicate instruments. On giving tension to the muscles of the left arm, the needle was instantly made to move by M. Mitscherlich; and that in the direction predicted by M. Reymond, viz., one indicating a current from the hand to the shoulder of the arm which was in action. On stiffening his right arm, M. Mitscherlich made the needle move in an opposite direction, and traverse a smaller number of degrees, this arises from the fact, that the energy of muscular contraction is not always the same in both arms. Occupied as I have been for more than half a century with physiological researches of this kind, the discovery of M. Reymond has deeply interested me. It is a vital phenomenon, rendered sensible to us by an instrument of physics.

In connection with the same subject I may mention the result of some curious experiments recently made by M. Ducros. The conductors of a galvanometer were applied, one to the forehead and the other to the neck. The needle remained steady and marked forty degrees. The patient's thigh was now strongly pinched, and under the influence of the pain the needle passed to eighty degrees with great rapidity. The experiment, frequently repeated, gave the same results, and M. Ducros hence concludes "that all causes which increase vital activity react on the galvanic needle at a distance from the point of their immediate action."

Med. Times, July 14, 1849, p. 28.

154.—CASE OF BRONCHOCELE, CURED BY SETON.—By Richard Hey, Esq., York.

[The patient was a young lady 21 years of age who had suffered from bronchocele from early infancy. The tumour was of considerable size, of firm and resisting feel, and obstructed respiration to such a degree that surgical interference was deemed advisable. Accordingly (the patient having been placed under the influence of ether), Mr. Hey tells us.]

I passed a skein of silk through one half of the gland, commencing at the upper part in the median line, and taking, as nearly as possible, a semicircular direction, and brought it out at the corresponding point below, thus embracing half the tumour, and from three quarters to one inch deep, so that the seton was fairly established in the substance of the gland. The patient did not appear conscious of any pain during the operation; and there was no hemorrhage, of the least consequence.

For the first five weeks after the introduction of the seton, no material change took place; the discharge was slight, and it was found necessary to use the savine ointment, which had the effect of increasing the discharge, which was healthy pus.

Some time in the course of the sixth week after the introduction of the seton, the patient began to suffer from the feverish attack, which was prevalent. On the third or fourth night after this fever commenced she was seized with a cough of the most distressing character, which harrassed her extremely. In consequence of being unable to expectorate, which had always been the case latterly when suffering from cough, the oppression was urgent, and the head soon became affected, apparently in the imperfect ar-

terialization of the blood. The patient became delirious, and the tongue brown and dry. This condition continued about forty-eight hours, during which interval the seton had begun to discharge a thin, dirty-looking, and most offensive matter, in great abundance, which in a short time relieved the irritation about the windpipe, and the delirium then very much subsided.

This discharge from the seton continued most profuse for more than a fortnight, it being necessary to apply fresh dressings every two or three hours.

During the third week from the operation the discharge began to diminish, and towards the end of it, it seemed to loose its highly offensive smell, and to assume a more healthy character. There was never any appearance of sloughing, nor any indication of very active inflammation in the thyroid-gland. The debility consequent upon this state of things was very great, but the convalescence, though prolonged, was ultimately complete.

As soon as the fever disappeared, and the discharge from the seton began to assume the appearance of healthy pus, the absorption or dissipation of the gland, which, as I have observed, had previously not been very marked, made rapid progress, and by the time the strength was re-established almost all vestige of enlargement had disappeared. I have allowed some time to elapse since writing the above, and am enabled to say that the cure is perfectly satisfactory, and the relief most grateful to the patient.

Remarks.—There is nothing new in this operation, yet I think it scarcely meets with that attention which it deserves—at least I have myself never before seen it resorted to. Any of your readers who may be interested in the matter will find several cases detailed in the *Transactions* of the Royal Medical and Chirurgical Society. Although the operation was known at least a century ago, yet Dr. Quadri, of Naples, seems to have revived it, and practised it to a considerable extent about the years 1817 and 1818. Mr. Copland Hutchinson, in 1819, also tried it in some instances; Mr. T. A. Thompson and others have also adopted it, the general result of which seems to have been favourable. Mr. C. Hutchinson observes:

"Upon the whole the operation by seton in bronchocele is not, generally speaking, to be considered as dangerous, when performed by a judicious surgeon, well acquainted with the anatomical structure of parts, but in delicate and irritable habits, and in the hard lobulated species of the disease, some circumspection is to be observed; and, indeed, in such constitutions a cautious practitioner would well weigh the necessity of operating at all, unless the symptoms of suffocation and impeded deglutition became urgent." In some cases recorded, the danger from hæmorrhage seems to have been much increased from using a common seton needle. In order to escape such a contingency, I had a curved trochar made, and fixed in a handle, groved like a lithotomy staff, with an eye behind the shoulder; then, threading this with a single silk, to which a skein was attached, I passed the trochar in the manner already described, until I could get hold of the single skein; I then withdrew the trochar, and with great ease drew the skein through the canal thus formed. *Prov. Med. and Sur. Jour., Sept. 19, 1849, p. 516.*

155.—TREATMENT OF WOUNDS OF THE LARYNX OR TRACHEA.—By A. Eves, Esq., Surgeon to the Cheltenham General Hospital.

[It has been a subject of much discussion, whether, in cases of free transverse division of the larynx or trachea, we ought to bring the wound together by sutures, or to leave it open. If the wound is closed by sutures there is danger of asphyxia from accumulation of blood and mucus in the tubes; and if, on the other hand, the wound is not healed at an early period, the patient will seldom recover. Mr. Eves makes the following observations upon this point of treatment:]

First. What are our prospects in a case in which the air passages, being

severely wounded are, nevertheless, attempted to be healed by position, without sutures? It appears to me that such a case would almost necessarily terminate fatally, and such has been the fact in all the instances I have witnessed. The great mobility of the parts, in respiration and swallowing; the tendency of the lower part of the trachea or larynx to sink down, when completely divided; and the consequent irritation and congestion of the lungs; are the chief difficulties which we have to encounter.

Secondly. It has been remarked that the patient in whom the larynx or trachea is divided may die, if the wound be brought together by sutures, from accumulation of blood and mucus in the bronchial tubes and cells, but as it is almost certain that the patient must die of these severe wounds, if sutures be not employed, it certainly follows that we ought to use them. Mr. M'Whinnie says that sutures are not allowable in wounds of the air passages; that they are irritating and hurtful; but Mr. Stanley refers to a successful case by Rust, of Berlin, in which sutures were introduced through separated portions of the thyroid cartilage; and my friend, Mr. Rumsey, of Gloucester, at a meeting of the Gloucestershire Medical and Surgical Association, related a case in which the larynx was completely divided through the thyro-hyoid ligament, and in which he successfully introduced sutures through the thyroid cartilage.

In this case the sutures did not produce irritation, and the case did well. But again the question recurs—Is there not danger in closing the wound? It must be confessed there is, and before such a practice is attempted, all hemorrhage must be carefully restrained. It is not my intention to give an account of all the means to be used in such cases, but merely to refer to a plan which, as I mentioned before, appears calculated to remove the ill effects of each kind of treatment to which I have alluded, at the commencement of these remarks.

The treatment, then, which I should adopt in a case in which the larynx or trachea has been freely divided, would be, after all hemorrhage was perfectly stopped, and after waiting a short period to be assured on that point, to bring the parts accurately together by sutures, introduced even through the cartilages, if necessary; then, if great difficulty of breathing should arise, so as to threaten immediate asphyxia, either from derangement of the rima glottidis, or from accumulation of fluid in the bronchial tubes and cells, I should immediately adopt the suggestion thrown out by Mr. Porter, of Dublin, and open the trachea by a longitudinal incision; of course, this must not be thought of, except there appears an absolute necessity for such a step; but it is satisfactory to know, that we have the means in our power of rendering that line of treatment, which is certainly the best, free from the dangers which have hitherto been apparently connected with it. I would also strongly insist upon the necessity of preventing a drop of nourishment from passing by the mouth for a few days, and the necessity of nourishing the patient by enemata. To prove the sufficiency of this mode of conveying nourishment, I would refer to a case treated in the Meath Hospital, in which, Mr. Porter states, the patient was thus supported for several months, positively refusing all food by the mouth. *Lancet, May 26, 1849, p. 457.*

156.—A NEW VAPOUR BATH.

[At a meeting of the London Medical Society,]

Dr. Golding Bird exhibited a vapour bath, similar in some respects to that of Duval, but easier of application, and cheaper; it is the invention of Mr. Moss, of Bartholomew-square, Old-street. It consists of an outer case or boiler, not unlike a waggon-boiler in appearance, and is supplied to a regulated height with water, for which purpose the feeding aperture is so constructed as to prevent mistake, the water finding its own level, and regulated in quantity for the prevention of boiling over, (as water) communicating with the pipes. A valve is attached for the safety of the apparatus.

At the front end of the boiler an aperture, two inches in diameter, leads to an internal trough, which is water-tight, with the exception of an orifice or slot, open three quarters of an inch at the top, and extending nearly to the extremity of the boiler; this trough is designed for the admission of medicaments, &c. From the outer case, and into the interior of the trough, a perforated box and cover is fitted, which can be used or dispensed with at pleasure. Its design is for the reception of sponge or lint, upon which any liquid can be retained. The trough, box, &c., is covered by a small cover (not unlike the cover of a syrup bottle,) and can be adjusted instanter. In the centre of the cover a pipe is fixed, on which an elbow can be slipped to regulate any height or direction desired; to this can be attached a pipe, regulating the length for the conveyance of the vapour; the whole preparation occupying but a few seconds. The larger pipe for general diffusion, does not require a pad, but a smaller pipe, suited for local application, is fitted with the perforated pipe and flannel pad. The vapour generated in the boiler passes through the trough, thence through the box onwards, medicated in its progress towards the pipe and the patient.

Remarkable States of the Muscular System.—Dr. Bird illustrated the case with which the apparatus could be applied, and he related three cases in which it had been found of great service in Guy's Hospital. A little boy, two years and a half old, a remarkably fine and healthy looking child, was brought to Guy's Hospital, about twelve months since, by his mother, doubled up, as it were, in her lap. His countenance was expressive of great anguish. It appeared that a few days before he had fallen into some cold water; the accident was followed by the usual symptoms of a cold, and by a total incapacity of bending the limbs, any attempt to extend them causing extreme agony. The case presented in this respect all the characters of acute rheumatism, but there was no swelling or redness of the joints, and only slight febrile symptoms presented themselves. The spine was healthy. The case was regarded as acute rheumatism. He was in the hospital for several days; perspiration often occurred, but the skin was cold and clammy. He was ordered the vapour bath, and after two or three applications of this remedy he could use his limbs, and in ten days was well. Two other cases of a similar nature had occurred, and had been treated in the same way with success. In two of these cases, the slightest *frottement* was heard during the progress of treatment; in one it had disappeared; in the other it still remained. In one lighter case, the iodide of potassium had been used with the warm bath; the patient got well, but was longer in recovering. These cases were peculiar, and could not be called rheumatic, in the strict sense of the word. There was no description of them to be found in books. In two of the three cases the urine had a milky appearance, and contained urate of ammonia. *Lancet, Oct. 27, 1849, p. 457.*

167.—CHEMICAL CHARACTERS OF ANIMAL TISSUES.—By Dr. Aldridge Dublin.

[In a paper on this subject, read before the Dublin Natural History Society, Dr. Aldridge stated that, at a previous meeting of the Society,]

He had described the chemical means of distinguishing the principal tissues of which animals are composed; he had shown them that the ligamentary tissue, which is present in the so-called cellular tissue as well as in the tendons, non-elastic ligaments, and fasciæ, is composed of interlaced fibres which dissolve in water, by prolonged boiling becoming converted into glue, and which swell and coalesce when subjected to the action of acetic acid; that elastic tissue differs in these respects from the ligamentary, whilst the fibrillæ of muscles differ from both by their behaviour with nitric acid and ammonia. In all these tissues the primitive cells rapidly develope in opposite directions into fibres; but the structure of cartilage is

peculiar in the animal organism, resembling that of some of the simpler vegetables, in which numerous mother cells are scattered throughout a homogeneous and definite basis. Cartilage is also distinct in its chemical characters, being neither albuminous or gelatinous, but convertible, by ebullition, into the substance called chondrin. Out of the tissues enumerated, together with the nervous, all the organs of the higher animals are framed, so that it is a comparatively easy task to analyze the organic elements of any organ, by availing ourselves of the assistance which chemistry can afford to the microscope. But upon every surface of an animal, whether external or internal, there is constantly going on, as long as life continues another process of organization distinct from that which forms the described tissues, but which is not inferior in importance. This exercise of *nutrition* consists in the perpetual construction of nucleated cells, that, unlike those which develop within the organs, have little or no tendency to elongate themselves into fibres. It has been said, that these cells are found upon every animal surface, both internally and externally; they cover the whole of the exterior, constituting cuticle, hairs, horn, scales, whalebone, tortoise shell, &c. Coating the mucous lining of the pulmonary intestinal, and genito-urinary canals, they are collectively called epithelium; and the same name is given to them when lining the ducts of glands, the interior of blood vessels, or coating the free surfaces of serous cavities. If we examine the ultimate composition, or chemical properties, of these superficial cells, taken from different surfaces, we shall find slight differences between cuticle and horn, whalebone and hair, but these differences are not difficult to explain. They are due to the fact, that the substances we examine are not pure proximate organic principles, but are mixtures of various substances in different proportions. There is the cell-wall, which in the animal is probably, as it is known to be in the vegetable kingdom, a combination of proximate elements; then there are the cell-contents and the nucleus, and, in many instances, an encrusting matter on the *cell-wall*, which serves to bind the cells together. The consideration of these facts will serve to show the absurdity of bestowing distinctive chemical names, or recording ultimate analyses of substances so complicated and variable. But there are sufficient evidences to show, that all these cellular formations belong to the same group; and among these proofs, one of the most singular is, that a kind of albumen constitutes always a chief part of the cell-wall. This element can always be recognized by its behaviour with nitric acid and water of ammonia, treated with which it becomas a deep orange. Every one is familiar with the effect of nitric acid in staining the skin, and advantage is taken of this property in the dying of silk, which, on account of its albuminous origin, becomes of a deep yellow, when first immersed in nitric acid and subsequently in water of ammonia. Being composed of albumen, the production of these surface cells, whether cuticular or epithelial, is not difficult to understand; the albumen of exuded liquor sanguinis has but to coagulate for their production On the papillary surface of the skin, we might suppose this coagulation to be effected by the acid perspiration, especially as we know that an analogous process is employed to coagulate albumen under other circumstances. Thus the spider's web is formed of threads which consist of albumen, coagulated by the acid secretion of the minute pore through which the secretion, previously liquid, is projected. The fluid contents of the pollen, also, are coagulated by the acid secretion on the stigma of the flower. But there are other reasons for thinking that the coagulation of excreted albumen into the cuticular cell-wall is not due to the agency of acids. The similar epithelium is produced, for the most part, amidst an alkaline secretion; and it will be seen, further on, that it is more probable that the cell-wall determines, primarily, the acidity of the perspiration, than that the latter property is the cause of the formation of the cell-wall. Another character common to all cells, is that of chemically modifying the blood or nourishing juice; as soon as the liquid

portion of the blood gets into a cell, so soon does it begin to undergo chemical changes. Each little cell may be regarded as a chemical laboratory destined to form a product necessary to the perfection of the organism. Each cell is a gland, and those organs that we are accustomed to call glands are only more or less complicated arrangements for extending capillary surfaces, upon which these cells can form themselves. Upon each surface, a different chemical change is effected in the cells; in some pigment is formed, as in the choroid in the youngest, and consequently least superficial cuticular layer, in negroes, supposed by some to be distinct anatomical layer; and also in a similarly situated layer arranged in an areola around the nipple of pregnant women. Some cells convert the blood into mucus, others into bile, and others into urea, uric acid, and the various constituents of the urine. This chemical action of cells is co-extensive with their presence in both divisions of organized nature—in plants as well as in animals.

The blood of plants, or the ascending sap, as it is called, is a saccharine solution:—to form cells in the vegetable, the sugar only suffers an isomeric modification; the cellulose or substance of which the cell-wall is composed does not differ in ultimate composition from sugar; but as soon as the cell is formed, it acts chemically on its contents, and causes the production of a new substance,—albumen. In a similar manner, the chlorophylle which colours the herbaceous parts of vegetables is at first formed in cells; but those cells, like the epithelial, do not constitute any part of the permanent tissues, but are floating and evanescent; in time they burst, and permit the escape of their granular contents. It is thus that the various kingdoms of nature shed light on each other's operations.

Dr. Aldridge continued to say, that in connexion with this subject there was a point to which he wished to draw attention. It might be perceived that both in the animal and vegetable kingdoms, the blood was capable of solidifying itself, and becoming organised into cells, without change in its chemical composition. In speaking of the blood, he of course alluded to the essential element of the nourishing juice; in one case sugar, in the other albumen; both these were capable of forming cells, the walls of which retained the chemical composition of the substance out of which they were made, although their properties more or less varied. There was this great difference, however, between the cells which have a saccharine, and those which have an albuminous origin. The saccharine cells constitute, by their aggregation, the fixed and permanent tissues of vegetables; the albuminous cells in animals, on the contrary, never enter into the formation of the permanent tissues. Those tissues may be gelatinous, chondrous, or fibrinous, but are never albuminous. The albuminous cells are the result of a normal hemorrhage from all surfaces; and from the very mode of their production, are destined to a constant and necessary exfoliation. None of the permanent tissues of animals have their chemical representatives in the blood. We do not find in that fluid gelatin, chondrin, or the material of muscle, for the latter is not identical with fibrin. It is not exactly correct to call the muscles, the cartilages, or the ligamentary tissues, permanent; but there is an obvious and essential difference between these elements of the animal frame work, and the abrasive cells which coat the surfaces of the organs. It would appear that the blood of a vegetable need only to have its elements arranged in a new manner, to fit it for building up the various organs; but the blood of an animal must undergo a chemical change to prepare it for that purpose. The laboratory character of albuminous cells is the most universal amongst them; and in this they resemble the cells which generate chlorophylle. This resemblance is the more remarkable, inasmuch as chlorophylle contains nitrogen, thus betraying its albuminous origin. Yet, although albuminous cells do not enter into the construction of the animal frame work, it is likely that all animal cells are originally albuminous. This is certainly the case in the ligamentary

tissues, as is well exemplified during the formation of false membranes in serous inflammation. In this case the albuminous fluid poured out into the serous cavity, organises itself into a multitude of albuminous cells, but these in time grow into ligamentary fibres. The latter become glue by ebullition; the cells from whence they sprung could never be converted into glue by the most prolonged boiling. This affords us a clue to a particular stage in the animal nutrition. The chemical preparation of the materials necessary for the growth of ligaments, tendons, areoral tissue, and, most probably of cartilages and muscles, is confided to the laboratory function of albuminous cells. Henle supposes that ligamentary fibre proceeds from the development of the cell-wall, and that elastic fibre results from the development of the nucleus. But we can see, from the point of view to which we have attained, that it is neither the development of the cell-wall nor of the nucleus which produces the fibre; that the function of the cell is not merely to serve as a point of departure; but that it performs the part of a minute laboratory, in which is prepared the gelatine, the chondrin, or the muscular substance destined for the growth of the respective tissues.

From what had been said, the importance of these cellular formations in the animal kingdom would be manifest. They were the organs which prepared all the secretions; and which, moreover, produced those changes in the blood which fitted it for the purposes of nutrition. It had been said that all surfaces are clothed with these productions; but to this general statement the teeth, probably, constitute an exception. The blood-vessels are lined with epithelium, and the white and red corpuscles are analogous formations. The epithelium of mucous membranes is notoriously of three kinds; the pavement, the cylindrical, and the ciliated. The latter is covered with numerous minute processes like hairs, which constantly undergo an oscillatory motion when placed in a liquid. The members of the Society were familiar with the moving threads having club-shaped extremities, which are so constantly present in the spermatic fluid, and which have been so commonly considered as animalculæ, and named spermatozoa. Certainly nothing can be more difficult, whilst watching their motions, swimming about apparently under the influence of a guiding will, than to avoid the opinion of their distinctive animality. But there were various reasons which led him (Dr. A.) to disbelieve that these threads are animalculæ. In the first place, the nature of their motion, gradually diminishing in energy until it ceases, but never intermitting without some external mechanical cause. Secondly, their little tendency to putrify in comparison with any true animalculæ; and lastly, the extremely similar motions of the cilii of epithelium, even when broken off from the cells to which they had been attached. These considerations led him to think that these so-called spermatozoa are really analogous to ciliæ; and this opinion is much strengthened by the examination of their mode of origin, as delineated by Wagner. They are first observed as a bundle of threads, contained within a cell; those threads developed in length, become curved like an ω, and in time, by their elasticity, burst the cell which previously contained them, and then separate from each other.

From this description, it would appear, that they differ from ordinary ciliæ, chiefly, in being produced within the cell-wall, instead of externally. It is probable that the same cells elaborate the fluid sperm, a chemical principle of a very peculiar nature. There is a difference worthy of note between the products of the cells coating external and internal surfaces. The cutaneous secretions are usually acid; the secretions from the mucous membranes are for the most part alkaline. There are apparent, rather than real exceptions to this rule, such as the gastric juice, the urine, &c.; but generally the fact is as stated; and this is connected with a difference of electrical distribution. so that Matteuci, upon the introduction of a galvanometer, as an element of a circle, of which a mucous surface and the skin

also constituted members, was enabled to produce a divergence of several degrees. Dr. Aldridge believes that this difference is owing to the relative facility of contact with atmospheric air. It has been already seen that cells are little chemical apparatuses, for changing the composition of the blood-elements; but that the aid of extraneous agents is frequently resorted to in accomplishing these metamorphoses is no less evident. Thus it is in the leaves and bark of plants, parts most exposed to the air, that the proper juices are formed. In warm blooded animals, the iron of the food is combined in the capillaries with the first products of waste, to form the colouring matter of the red globules. Benzoic acid, when absorbed into the circulation, combines with some of the elements of the urine, to produce hippuric acid. It must be admitted, therefore, that the free access to air is a cause most likely to modify the nature of secretion. Now, there is reason to believe that sugar and ammonia are among the primary products of the decomposition of albumen. It is not improbable that these compounds are common to all animal secretions. When sugar is in excess in the urine, it constitutes the disease named diabetes mellitus. A variety of sugar is known to be a constant constituent of milk. Sugar has latterly been detected as a very common constituent of bile and blood. Dr. Aldridge himself has lately shown that it is always present in the white of eggs; and in incubated eggs; sugar, identical with that of milk has been detected. Now, if we suppose sugar to be a constant product of the laboratory action of albuminous cells, we shall have to admit its presence both in the cutaneous and mucous secretions. But in the former case it will be secreted in free contact with air; in the latter case it will be more or less protected from the atmosphere. It is not wonderful, therefore, that the sugar secreted by the cuticular cells should rapidly become converted into acetic or lactic acids, or that the sugar secreted by the epithelium should be slow to undergo this change. Both secretions contain ammonia, which can readily be detected in them; but this gas escapes from the skin, whilst it is retained in the mucous secretion. These considerations explain the differences which exist between the two classes of secretion in relation to their chemical reactions.

It is not, however, on surfaces only that albuminous cells exercise their important functions. It has been seen that they are the originators of all the tissues, preparing within their cavities the pabulum for the growth of each. It would appear, also, that they exert a considerable influence in determining the structure of organs. Thus the ducts of glands have usually been described as evolutions of the lining membranes of neighbouring mucous or cutaneous surfaces. But this observation does not appear to be borne out by the examination of the simple folicles of the intestines. Many of these will be found to be furnished with excretory orifices; but in some, none such can be detected. If the latter be regarded as a preliminary step in their formation, the production of a simple or conglomerate gland would seem to depend on what might be likened to one or many little abscesses, which, bursting on the nearest and most accessible surfaces, would produce a simple or ramified duct. This is what is known to take place in the ovary upon the escape of the ova; but in that case, the termination of the fistula of escape soon becomes cicatrised, constituting the *corpus luteum*. *Med. Times, May* 26, 1849, *p.* 587.

458.—NON-IDENTITY OF MAGNETISM AND ELECTRICITY, AND ON SOME POINTS CONNECTED WITH WINDS.—By J. C. Atkinson, Esq., Westminster.

[Mr. Atkinson thinks that magnetism and electricity are not identical, and differ in the effects which they produce upon the weather and climate. He says:]

Magnetism of the earth is a state of continual and restless fluctuation,

and its changes from moment to moment are strictly simultaneous at every point where observations of this nature have been made. It is my impression that cold is an effect of magnetic influence, as solar heat in the atmosphere is an effect of electric action, and I conclude, that the vital principle of temperature is the result of the combined agency of these two forces, variously modified, according to seasons and latitudes of the several places. The range of the barometer gradually increases towards the North Pole. The rise of the mercury may be observed in this country during the prevalence of northern winds, conveying as they do, magnetic currents, till at last it reaches to two or three inches. On the contrary, between the tropics, the variations of the barometer are exceedingly small; whilst winds from the southward in temperate latitudes, if the electric current or *wind is* continued for any time, will cause a tendency in the mercury to fall.

The winds are more powerful in the production of weather than would appear at first sight, and although the moon was always supposed to exercise great control over the weather, yet it is strange that both Drs. Herschel and Clarke, great observers of the heavens, state in the weather tables,—as a set off, I conjecture, to her influence,—"If the particular change of the moon, full or new, takes place when the wind is so and so, it will be fine for the ensuing week, and the reverse if it is not." I ask, does this *prove the* dominion of the moon over the winds, or the contrary?

Magnetism.	*Electricity.*
1. The intensity of the magnetic force in different parts of the earth is according to the distance from the poles.	1. The intensity of electric force is greatest at the tropics, and diminishes as it approaches the poles.
2. The frigid zone, where magnetism is in the greatest intensity, enjoys an atmospheric calm which is unknown in temperate regions; it has no storms, no hail, and scarcely a tempest.	2. The most vivid lightning and the loudest thunder are *peculiar to* the tropics: here vegetation is vigorous and active at all seasons.
3. The splendour of the aurora borealis, reflected by the snow, dispels the darkness of the polar night, but is not accompanied with danger.	3. Igneous and fiery meteors, fireballs, lightning, are the peculiar electrical phenomena of the tropics.
4. Magnetism suspends the decomposition of vegetable and animal matter.	4. Electricity assists decomposition in all vegetable and animal substances.
5. In northern latitudes the mercury of the barometer always stands high: in the temperate latitudes it is liable to frequent variations.	5. The mercury of the barometer is always low in the torrid zone, and varies but little during the changes of weather.
6. Magnetism has been known to produce sedative action on the human frame, when applied under certain conditions, causing repose, if not sleep.	6. Electricity is of an exciting character, increasing the circulation of the blood, and rousing paralytic functions of the nervous centres.
7. The northern currents of atmosphere, accompanied as they are with magnetism, have the power of expansive action on the mercurial column of the barometer, wherever it may be placed, either in a warm room or in the open air.	7. The southern currents of the atmosphere, accompanied with free electricity, cause a fall of the mercurial column, under any *circumstance* of position of the barometer.
8. Snow from the north-west wind has been found to contain more oxygen than rain or river water, and more carbon.	8. Electricity causes the rain to descend with less oxygen than snow water, and less carbon.

9. The magnetic intensity of the earth is indicated by needles suspended vertically; and in sailing from England towards the North Pole, it is seen that the needle dips, or inclines more and more with the increase of latitude, until, at a certain point, it remains exactly perpendicular, with its south pole downwards.

9. In sailing towards the equator, with a magnetic needle suspended in the like manner, the inclination or dip gradually decreases, until the needle rests in a perfectly horizontal position.

The above are some of the reasons which have induced me to think that magnetism and electricity are not strictly identical, their operations being as distinct as heat and cold; and I have therefore come to an analysis of the influence of the winds, and a theory to establish something of a definite character. Winds are not decisive as to their influence on health, when continually changing; that is, not remaining in any fixed quarter for two or three hours. Winds have been known to blow from different currents, as spoken of before. Mr. Green, the aeronaut, in his celebrated aerial trip from Vauxhall Gardens to Nassau, in Germany, frequently availed himself of the different currents of air at different altitudes, by raising and lowering his balloon; and in this way he regulated his passage across the Channel, opposite Dover. The highest elevation attained by the aeronaut, during his voyage of nearly 500 miles, (British) was 12,000 feet above the level of the sea. At the highest point of elevation, it appears, from the account, that there was less circulation of air than at any point below it.

On the earth's surface, then, we have frequent changes of wind, and this more particularly in temperate latitudes or climates: and hence there are frequent alterations in the atmosphere as regards both temperature and electro-magnetism. Sometimes a wind well known for its peculiar mild character assumes so different a nature as to be mistaken for a wind from altogether another quarter of the globe. This arises from various winds supplying one current of air. For instance, we have a south-west wind of some velocity, of a stormy nature, and highly charged with electricity. Suppose, then, this wind to have a parallel breadth of any number of miles, and then to be supplied by north-east and north-west winds, of course, under such an influence, we shall have a great reduction of the temperature, and other qualities somewhat reversed, for a time, at least.

A north-east wind, on the other hand, will frequently have its real nature or character altered, owing to rapid changes of aerial currents during stormy or thundery weather; and this happens more particularly when the observer is situated on the external edge, as it were, of a parallel current of wind, (which varies in diameter, at various seasons, from ten to one hundred miles; and hence an unusual temperature is given to it. In the centre, however, of the said parallel current you have the true quality unmodified.

We now come to the question of health and disease under the operation of the several winds. The north wind (I here refer to the magnetic north,) has a different influence on different constitutions and ages. The temperature of this wind, of course varies, as has been before intimated, according to the seasons: but its general characteristics are always alike. This wind is usually unattended by hail, or even snow,—although, a few points to the eastward, it will often be followed, in the winter season, by a supply of the above phenomena. *Lancet, July 28, 1849, p. 91.*

159.—TREATMENT OF THE STING OF A BEE.

The immediate application of honey is good; the use of indigo is better; and Tobacco-juice, though we cannot speak of it from experience as of the other two, may be equally or more efficacious. It is thus recommended in De Vriend van Dan Landman:—"Apply the juice of tobacco as you find it

in the mouth-end of a smoked cigar, or in the reservoir of a German pipe. It not only immediately relieves the pain, but prevents swelling." The substance recommended is not, it must be remarked, the juice, but the empyreumatic oil which, as the experiments of Dr. Morris (Edin. Med. and Surgical Journal,) have shown, is a much more energetic poison than the juice.

London Journal of Medicine, Nov. 1849, *p.* 1061.

[160.—NEW MODE OF VENTILATING BY THE SYPHON.

[The following is copied into the Lancet from the Literary Gazette :]

Dr. Crowne has enrolled a patent for Improvements in Ventilating Rooms and Apartments, of the perfect efficacy of which, we believe, there cannot be a doubt, and on a principle at once most simple and unexpected. Without going into details at present, we may state that the improvements are based upon an action in the inverted syphon which had not previously attracted the notice of any experimenter—viz.: that if fixed with legs of unequal length, the air rushes down into the shorter leg, and circulates up, and discharges itself from the longer leg. It is easy to see how readily this can be applied to any chamber, in order to purify its atmosphere. Let the orifice of the shorter leg be disposed where it can receive the current, and lead it into the chimney (in mines, into the shaft,) so as to convert that chimney or shaft into the longer leg, and you have at once the circulation complete. A similar air syphon can be employed in ships, and the lowest holds, where disease is generated in the close births of the crowded seamen, be rendered as fresh as the upper decks. The curiosity of this discovery is, that air in a syphon reverses the action of water, or other liquid, which enters and descends or moves down in the longer leg, and rises up in the shorter leg! This is now a demonstrable fact; but how is the principle to be accounted for? It puzzles our philosophy. That air in the bent tube is not to the surrounding atmosphere as water, or any heavier body, is evident; and it must be from this relation that the updraft in the longer leg is caused, and the constant circulation and withdrawal of polluted gases carried on. But be this as it may, one thing is certain—that a more useful and important discovery has never been made for the comfort and health of civilized man. We see no end to its application. There is not a sanitary measure suggested to which it may not form a most beneficial adjunct. There is not a hovel, a cellar, a crypt, or a black close hole any where, that it may not cleanse and disinfect. We trust that no time will be lost in bringing it to the public test on a large scale, and we foresee no impediment to its being immediately and universally adopted for the public weal. We ought to remark that fires or heating apparatus are not at all necessary: and that, as the specification expresses it, "this action is not prevented by making the shorter leg hot while the longer leg remains cold, and no artificial heat is necessary to the longer leg of the air-syphon to cause this action to take place."

[Extraordinary as this may appear, we have witnessed the experiments made in various ways, with tubes from less than an inch to nearly a foot in diameter, and we can vouch for the fact being perfectly demonstrated. Light gas does descend the shorter leg when heated, and ascend the longer leg where the column of air is much colder and heavier!—Ed. *L. G.*]

Lancet, Sept. 15, 1849, *p.* 305.

161.—ON THE MODUS OPERANDI OF TONIC REMEDIES.—By Dr. Golding Bird, F. R. S.

[Dr. Golding Bird brought forward the following views of the modus operandi of tonic medicines, in a lecture delivered before the College of

Physicians. After referring to the recent writings of Dumas and Barthe, as throwing some light on the mode in which medicines act, Dr. Bird said :

If I were to point to any one class of therapeutical agents about which there is less satisfaction among professional men, (with the exception of re solvents,) I should pick out the class called tonic. According to the general signification, almost anything might become tonic—it merely expressing a generic term: and, if you look at the various drugs comprehended under this head, it is curious to observe how many of them are totally distinct,—thus: iron, bismuth, silver, sarsaparilla, gentiana, and serpentaria. Now, I select these as specimens all included under the generic term—tonics, and yet how different their modes of action, and how many practical mistakes occur in their administration. Any particular remedy being *called* a tonic, the patient believes a tonic has been given. Thus, the mucous membrane of the ilium may be weak, and because iron is a tonic, therefore iron is given. How often has the practitioner seen cases where the strength is deficient, and where the patient has been treated with bitter tonics without any benefit resulting.

Much of this failure occurs through want of a due consideration of the particular condition which makes it necessary to give tone to the system. We may be said to have all a series of forces acting within us; these we do not seek to define; but if we could trace disease to their undue action, we should be better prepared to administer our remedies. Now, my object is, to endeavour to throw some light on this matter. If we admit the existence of a vital force, we shall regard the several forces in a different light than those operating on dead matter; in the latter case there are a series of forces following definite laws, and we can accurately point out their results, and apply certain mathematical laws to them. But not so with respect to the living being; here the force cannot, at present at least, be rendered obedient to certain laws so readily. Therefore, the necessity of studying these forces. All will admit the existence in the body of two great forces,—

1. The vital force as opposed to
2. The chemical.

While we admit the first of these, it is obvious, that, unless some cause existed in the body which tended to break up and emaciate, in proportion as we took food, so we should grow on to any size and strength; and therefore it is necessary, at the same time, to admit a chemical force operating to waste. These forces are antagonistic, we know; but they modify each other.

But there is another series of forces which has been pointed out by Barthe and Dumas. In investigating the influence of remedies, these writers indicate the existence of two distinct forces in every organ, and which influence its growth. Thus the radical or (vegetative) force is inherent to it, and its influence is to induce every organ to carry on its particular function. This is a passive force, or organic inertia. Then there is an active force influencing any particular organ, exciting, diminishing, or modifying its function; and the sum of these two constitutes the vital force. Thus, suppose we have a voltaic battery, and the wires be plunged in some electric compound, capable of conducting electricity, the vessels containing the fluid represent the kidneys; the voltaic battery represents the series of organs which developes the principle of life, so far as the nerves are concerned. The battery being ready, but uncharged, is in a passive state; but on filling it with acid, an electric current is induced, which traverses the wires, and produces decomposition; but it also points out the polarised condition of the particles. Now, the current from the battery, would represent the active force, and the polarised condition of the particles the radical. It has been thought, that the radical force is excited by the acting force of the battery, and that that action remains, although not in the battery a polarised condition which

keeps up an action, and thus produces a tendency for composition to go on. Then, using, this rude analogy, let us suppose a dead body, and that we had the power of lighting up the influence of life. While it was inactive, secretion would not go on; but could we breathe into it the breath of life, what would it do?—at once set up the action of the system, and that force—the nervous influence—would at once be determined to certain organs, and these would resume their function. Now, that there exist these two distinct forces, we have no doubt, for we may control the one without affecting the other. A patient is dropsical; the kidneys do not act; a stimulous is applied, and they perform their function;—the fact is, you have determined the acting force and thus quickened secretion. On the other hand, you have a patient with the gout; the urine is very scanty, —there is hardly any secretion at all, and yet the acting forces are too active if possible. Here, by giving alkaline salts, what do we do? We do not determine more force to the kidneys, but increase the secretion of urine. As another illustration, we may say, that the acting force is like the influence of steam in the steam-engine, while the radical force acts like the fly-wheel. Then it becomes a question—How far can we act on these forces? Take the radical force, for instance. Its intensity differs much: of two individuals, they may have very different degrees of radical forces, and yet be apparently healthy; the one was born of healthy parents, and living in the open country; this one would live long, secrete properly, and live healthy; but another acquires struma. What is the result? We find that his glands secrete unhealthy matter, and then we get the horrors of scrofula. Now, the combined influence of these two forces developes the vital force, or that which is equal to the radical force plus an active force. The combined influence of these determines the healthy state of the patient—*quoad* constitutional health and vigour. Hippocrates distinguished this condition as one beyond which health could not be carried, and the writers above mentioned particularly point out, that there is a point in stimulating these forces which cannot be exceeded without affecting the health. Thus, if you stimulate a man in fair health, and give him iron as a tonic, if that absorbs, you increase the blood, and he becomes apoplectic, or plethoric with a tendency to hæmorrhage; or if you give a bitter tonic, instead of his becoming more vigorous, you excite the circulation, and produce headache and distress. These writers suppose that Hippocrates alludes to the vital force when he speaks thus in his third Aphorism:—"An extremely full habit of body, in those who devote themselves to gymnastic exercises, is dangerous; for as it can neither remain in the same state, nor change it into a better, it must necessarily become worse. For this reason, it is advisable that the too full habit be reduced, in order that the body may commence a new course of nutrition. But this reduction must not be carried to an extreme, for that would be dangerous; it must be done only asfar as the nature of the patient will admit."

Now, these two forces, the radical and the active force, are active in maintaining the status of the body. But there are others, also, which are active in enabling the body to undergo repair. One of the most mysterious of these is the force of assimilation; it is this which has been so erroneously considered as synonymous with digestion. It is not so, however, but widely different. It is a force lighted up by the vital principle, and which enables the individual to cause the pabulum to be assimilated to his own structure.

Thus, even in the vegetable world, we have in the same hedge, belladonna, nightshade, hemlock, the blackberry, and the rosa canina; and we find each one of these absorbing the same fluid from the earth, and yet giving out qualities totally distinct; for instance, we have the hemlock and the nightshade developing deadly poison, and the rose and the blackberry giving out citric acid and saccharine matter. This is one of the most remarkable phenomena in nature, and in the human body we see it to perfection; and one of the most important weapons is that which thus helps the physician

to control disease. Then we have another—a certain force of vital resistance, which appears to be active in preserving existence and in opposing changes; this is synonymous with the vital force. Taking the views of the two authors, these forces differ to a curious extent in different persons. In some the force of resistance is very prominent; in others that of assimilation is very greatly developed. Thus a person may be to all appearance healthy, florid complexion, and stout; yet he will suffer intensely from heat, he will get chilblains from exposure to cold—he will have fits on bleeding him to one ounce; such a one has very little of the force of resistance, and we also know how distressing it is to treat patients of this character. On the other hand, we may meet with one whose force of assimilation is very small, but where that of resistance is most remarkable. Look at these skeletons, who go through their work, hardly assimilating any of their food, and yet stand all the wear and tear. These are they who go through, under all sorts of influences, and never seem to wear out. Now, this force of resistance is one which we may excite and develope, and one which we may with equal facility crush. A person under the influence of plague, or of typhus poison,—he is at once crushed by it,—chemical decomposition going on even while he is living,—being a mass of bed-sores, and he dies in the most frightful state: here the force of vital resistance is destroyed suddenly. In others this force gradually sinks, as for instance in those under the influence of marsh miasma; here the force is gradually diminished, till at last, on a poison being received, they are crushed, and die immediately, without any particular function being interfered with.

But, after all, what are these forces. Trace them to their one great source, and, undoubtedly, if we look to any part of the nervous system, we should look to the ganglionic system for the origin of them. Admitting, then, the existence of these forces, it is obvious that the definition of "tonic" will admit of a little clearing up. By "tonic," we mean anything which will increase energy. Included under this term are many remedies which widely differ, as arsenic and gentian. But in isolating the conditions in which tonic remedies do good, I shall distinguish them by putting them into two great classes,—the neuro-sthenic or dynamic, that which gives power; and the analeptic or hæmatic, which invigorates by restoring healthy constituents to the blood. Admitting, then, the existence of the forces, and that we have a set of remedies that will increase the vigour of the acting force, and give tone and vigour to the blood, we thus break ground; and, in looking to the class which I call dynamic I would point out the results of my own observation in reference to the action of these remedies. It appears to me that they may be divided into classes distinct from each other,—a division which I have found of very great service to me; if it answer no other purpose it assists a short memory, and I confess mine is of that character. Taking, then, the neuro-sthenic, those which increase the powers of the body, I venture to divide as follows:—

NEURO-STHENIC—(DYNAMIC.)

1. SIMPLE—
   - Quassia.
   - Conduus.
   - Chiryata.
   - Erythrea.
   - Menyanthis.
   - Calumba.

2. CALMATIVE—
   - Gentiana.
   - Humulus.

3. NUTRIENT—
   - Tussilago.
   - Cetraria.

5. NERVIN—
   - Shydmia.
   - Zinc.
   - Silver.
   - Bismuth.
   - Copper.

6. STIMULANT—
   - Stomach.
     - Absinthium.
     - Anthemis.
     - Aurantium.
     - Cascarilla.
     - Myrrha.

Sarsa.
Hemidesmus.

4. ANTIPERIODIC—
Quina.
Cinchonia.
Narcotin.
Salicin.
Beeberin.
Æsculin.
Arsenic?

Skin.
- Serpentaria.
- Contrayerva.
- Acorus.
- Guaco.
- Cusparia.

Intestines
- Simaruba.
- Hæmatoxylon.

ANALEPTIC—(HÆMATIC.)

Iron.
Food.
Oxygen.

From this, I think, we may see our way into the mode in which these act, according to the view which we have taken of the several forces. We talk of bitter tonics as adding to the vital powers; but, in so administering them, we only acquire the power of applying a force in a convenient, economical way. If by the whole amount of my physical force I cannot lift this piece of chalk, no human power will enable me to do it without the assistance of a mechanical force. If the chalk is such that I can lift it one foot in a second, no human force will enable me to do more; but, by applying a lever I could lift indeed higher, but, then, instead of lifting it one foot in a second, it would take ten seconds; so that, as to physical force, we cannot generate it.

So here, and with regard to bitter tonics classed under the head "simple," —to which I shall only allude in this lecture; they possess a crystallised bitter principle, which in all of them is analogous. These peculiar principles are incapable of exerting any particular influence on the secreting organs; but they appear to influence the stomach by increasing its assimilative force. This is the feature of this class of tonics; and I believe they do it by their influence on the vegetative nerves of the stomach, and by causing an increased secretion of gastric juice. In these (the simple) we have a different form of bitter tonics, consisting in the absence of a stringent influence. They owe their value to their crystallised principle, with the exception of the last two, which have not been examined; and when taken, they increase the assimilative force of the stomach—an all-important function, because it is the initiatory stage from which the formation of healthy blood is derived. Others of these tonics differ in the addition of other influences. The name of the second class is applied to a certain series of dynamics, which, while they increase the assimilative force of the stomach, do more; they act on the extremities of the nerves of the stomach, allay the debility of the organ, and act as sedative agents. The first is the hop; the second is not so generally admitted, but that it exists is certain. If the first is distilled, a certain oil is obtained like opium, and we sometimes meet with persons who cannot bear gentian; so that in the second class, I isolate one in which the remedies differ from the first in acting as sedatives and thus add another influence to another series of nerves.

Med. Times, July 14, 1849, *p.* 24.

162.—TREATMENT OF DROPSY BY COLCHICUM.—By M. EDOUARD VANDERZANDE.

The preparations of *colchicum autumnale* are usually employed solely on account of their efficacy in rheumatism and gout. Storck, however, who introduced this plant into the materia medica in 1763, recognized it as a

powerful hydragogue, and employed it as a succedaneum to squills. In spite of his recommendations, and of the favourable reports given by Pienck, Quarin, Zacht, Cullen, and others, the employment of colchicum in dropsy has not extended, and at last has been almost entirely neglected. In later times, the attention of some physicians has been fixed afresh on the power which Störk recognised in colchicum. Among others, Dr. Kennedy, in a memoir presented to the Surgical Society of Ireland, relates that he has, in a large number of dropsical cases, obtained astonishing results from the vinous tincture of this plant. Having also made use of this preparation in some cases of serious infiltration, and accumulation, I have thought it not unprofitable to give a summary account of the results which I have obtained; first, because they are of a nature to lead my professional brethren to have recourse to the hydragogue power of the plant in analogous cases; and also because the effects of colchicum have not always been so complete or so manifest as in the cases which I have observed, of which I shall record the principal.

Case 1. Jean Bulckaert, a workman, aged 42, of weak constitution, was seized, three years ago, with intermittent fever in Flanders, where, as is well known, this disease is endemic. Having been under treatment for several months in the hospital at Dixmude, he recovered; but, on his returning home, where he could only procure insufficient food, the disease was not long in recurring. Instead of then applying for medical advice, he had recourse to some domestic remedies, which produced no effect. The patient soon presented all the characters of paludal cachexia. The lower extremities, and the whole body in succession, became œdematous; the abdomen was distended, and the respiration impeded. It was when in this condition that Bulckaert first applied to me. After febrifuge tonics and diuretics had been used for six weeks, the œdema disappeared, and the state of the patient's health seemed satisfactory, although there still remained a slight enlargement of the spleen, of which he neglected to get relieved. Last April, two years after the first appearance of the fever, I was again sent for by him. The dropsy had reappeared, but this time it had not been preceded by an attack of fever: there was excessive serous infiltration of all parts of the body, and the urine was slightly albuminous. The same treatment as before was adopted, but without the least success; I then prescribed the wine of colchicum in daily doses of six grammes (about 3 ii.), increasing the dose by a gramme daily. The medicine was well-borne by the patient; it was increased to 40 grammes daily; this quantity was continued for four days, at the end of which time the patient was free from dropsy. During the latter period of the treatment, the alvine evacuations were abundant, and the quantity of urine was considerably increased.

Case 2. A woman, named Messiaen, became dropsical after an attack of confluent small-pox; the dropsy was preceeded, for some days, by paroxysms of intermittent fever. Neither nitric acid nor heat showed the presence of albumen in the urine. I treated her with wine of colchicum, in doses of eight grammes, without any other medicine. At the end of a fortnight the anasarca had disappeared, and the patient felt herself completely restored.

Case 3. A poor woman who had twice been attacked with articular rheumatism, from which had resulted an organic affection of the heart, with habitual dyspnœa, observed her lower extremities to become œdematous, without any known cause. The extreme misery in which this woman was, and her dirty habits, gave but little hope of a prompt result from any treatment whatever. I resolved, however, to give her colchicum, especially as I thought that the rheumatic diathesis was connected with the production of the dropsy. The medicine was not well borne, in doses of eight grammes. I diminished the dose by one half: but in a few days I had to discontinue its use entirely, in consequence of the occurrence of vomiting, dry tongue, and intense thirst. Some time after, when the symptoms of

gastric irritation, had been removed, I again employed the colchicum in smaller doses, but without any effect. Mild tonics were then prescribed; and, under their use, the œdema at length disappeared. The woman has still œdema of the feet.

Case 4. A miller, addicted to the use of alcoholic liquors, had for some days complained of *courbature*, loss of appetite, and a remarkable diminution of urine, when he perceived symptoms of dropsy. I first saw him on the 15th of last May. The lower extremities, the scrotum, and the hands, were very œdematous: the face was much puffed up; the abdomen was hard and distended; the respiration was impeded. On testing the urine with heat and nitric acid, a large quantity of albumen was detected. The tongue was furred, the stools unfrequent, and the pulse somewhat febrile. The patient complained of no pain in any part of his body. With the object of cleansing the digestive canal, I prescribed an emetocathartic, consisting of a deci-gramme (1½ grain) of tartar emetic, 32 grammes of magnesia, and 250 grammes of water, of which a wine glass full was to be taken every half hour. The patient had several evacuations from the stomach and intestines, without any marked effect on the dropsy. On the 18th of May, wine of colchicum was ordered in doses of six grammes, and was very easily supported. The next day, I increased the quantity by two grammes, and continued it for ten days. As this treatment produced no amelioration of the symptoms, the patient importuned me to try some other means. The urine being still albuminous, I had recourse to the internal administration of nitric acid, as recommended by Professor Forget. This medicine had the desired effect. In four or five days there was a remarkable diminution in the size of the scrotum, while the œdema of the extremities decreased; the abdomen became softer, and the face less puffy; the urine was more abundant and less albuminous. In spite of the continued use of the medicine, the patient remained in the same condition for some time; and it was only after using Bestuchef's tincture* for some days, that the œdema and cachexia disappeared, to be succeeded by rapid convalescence, and soon by recovery.

These observations appear to me to be of a nature to induce my professional brethren to have more frequent recourse to the use of wine of colchicum, in the treatment of certain dropsical affections. I am persuaded, though unable to specify the cases in which its employment is specially indicated, that this medicine may often be advantageously substituted for the hydragogues in most common use. At all events, I would not recommend it in all cases of albuminous nephritis; for there are medicines which act more directly on this disease, and, which, therefore, seem to me to be preferable. *Annales de la Soc. d'Emul. de la Flandre Occidentale*, as quoted in the *Revue Medico-Chirurgicale de Paris* for August, 1849.

London Jour. of Medicine, Nov. 1849, *p.* 1039.

169.—OIL OF ANDA, A NEW PURGATIVE.—By Alexander Ure, Esq.

[The Anda Gomesii is a Brazilian plant, belonging to the class and order Monœsia Monadelphia, N. O. Euphorbiaceæ. Its seeds are used as a cathartic by the inhabitants of the Brazils, and the oil expressed from them has been used in North America. Mr. Ure having administered this oil in several cases, gives the following account of its effect. He says:]

It may be observed, that the average dose of oil of anda administered was 20 drops, and to secure its entrance into the stomach it was swallowed on sugar. It offered nothing unpleasant to the taste, produced none of that heat in the throat which croton oil creates, seldom occasioned nausea or griping; it rarely operated within a period of two hours, although in one

* Bestuchef's tincture, otherwise called Klaproth's tincture, or ethereal tincture of chloride of iron, is composed of dry perchloride of iron, one part; Hoffman's liquor, seven parts.

or two instances I have known it act within half an hour after its ingestion.

Towards the maintenance of health it may be laid down as an essential condition, that the *effete* remains of food, and of the spent tissues and secretions present in the alimentary canal, should be evacuated at periodical intervals. Human fæces, of which these may be said to form the aggregate, exhibit all the signs of putrefying matter; they have a putrid smell, and animalcules of the *infusoria* class are developed in them. Hence it may be readily supposed, that if the fæcal excrementitious matter, averaging five ounces daily, be allowed to accumulate and remain for an undue length of time in the body, it must become a source of noisomeness and disease. It is, indeed, well known that some persons, who have passed several days without being thus relieved, exhale a stercoraceous odour. One of the worst forms of putrid fever I ever witnessed, and which eventually proved fatal, distinctly emanated from this cause. Everybody is familiar with the nuisance created by cesspools when vent is not given to their fetid contents; and does it not seem strange that individuals of moderate intelligence should, from want of a little attention, actually carry for days within them a nucleus of pollution, a cesspool in miniature? It is to inhabitants of populous towns, who lead a sedentary life, and are much confined within doors, that the above remarks especially apply; and without more than strenuously urging here the paramount importance of air, exercise, and diet, in obviating costiveness I have briefly directed the notice of the Society to a medicinal agent not heretofore employed in this country, and which may be found serviceable in promoting the above purpose.

Med. Times, Aug., 11, 1849, *p.* 120.

164.—USES OF COD-LIVER OIL.

On looking over the various treatises which have been published on this subject, and on weighing the opinions and statements which have been expressed in them, it is indeed abundantly evident that cod-liver oil is an agent of no inconsiderable power. It is also evident that its action is chiefly in one direction, and is exerted almost entirely in modifying, restoring, and improving the several processes partly of primary, but chiefly of secondary assimilation, the derangement of which constitutes the basis, as it were, and origin of certain symptoms which we are accustomed to treat, under various names, as special diseases.

In dyspepsia, that is, in diseases resulting from some defect of primary assimilation, its effects have not been very accurately studied, chiefly perhaps from the difficulty of finding pure and uncomplicated cases of this affection. It appears to be most useful in the atonic varieties, and in those cases of inflammatory gastro-duodenal dyspepsia, in which, after reduction of the more prominent symptoms, the digestive powers of the stomach and duodenum recover themselves with difficulty. But in any cases in which the dyspeptic symptoms are dependent on more serious lesions, on ulceration of the stomach, or on incipient organic disease of the walls, &c., the cod-liver oil appears to be unsuited, and even if retained on the stomach, to be inefficacious, or perhaps hurtful. It is chiefly in affections proceeding, as far as we at present know, from secondary mal-assimilation (to use the term of Dr. Prout), that the oil appears most useful. Such appears to be the case in chronic rheumatism, in rickets, in the various affections which are the local manifestations of the scrofulous diathesis, scrofulous caries, ophthalmia, tabes mesenterica, tubercular peritonitis, &c.; in phthisis pulmonalis, especially in the early stages; and in various chronic eruptions of the skin, as eczema, herpes, and some forms of impetigo. It appears to be more useful in these diseases of the skin, according as they can be traced back to some disorder of nutrition, and more especially if this borders on the condition which occurs in the scrofulous diathesis.

In addition, the oil has been used in a vast number of other affections, with an amount of benefit less marked and determinate. In true gout, psoriasis, porrigo, osteomalacia, in atonic amenorrhœa, in worms, and in the various sequelæ of smallpox, measles, and typhus, the opinions of its utility are very contradictory. It has appeared to be possessed of little power in Bright's disease, diabetes mellitus, and some other deep-seated and obscure affections. Cod-liver oil has also been found useful in cases in which tonics are indicated; as in convalescence after influenza, bronchitis, pneumonia, pleurisy, and other cases in which the disease having been partially or entirely removed, the constitution requires to have cautiously supplied to it both materials from which its impaired tissue may derive new force, and tone by which those materials may be effectively assimilated.

An opinion has been advanced, on very insufficient grounds however, that chronic rheumatism and tubercular consumption are in some degree antagonistic to each other. But independently of other arguments against such a view, we might be led to question its correctness by observing that the two diseases, or series of diseases, over which cod-liver oil appears to exert a considerable action, are chronic rheumatism and scrofulous affections. While in most other cases the benefit resulting from the use of the oil appears to be simply owing to its common tonic powers, in the above-named diseases there almost appears to be something specific about its action. *Brit. and For. Med. Chir. Rev., Oct.* 1849, *p.* 480.

160.—NUTRITIVE PROPERTIES OF FISH OIL.—By Robert Druitt, Esq.

Of the virtues of cod-liver oil there can be no question;—and it seems capable of doing two things. In the first place it fattens, and adds to the bulk of the body: and, in the second place, it gives nutrition a better turn, as it were; it makes the fluids and solids healthier as well as bulkier, and enables them to throw off a variety of cachectic derangements. These useful qualities have been partially accounted for on the supposition that they are due to a minute quantity of some biliary principle contained in the oil. This supposition seemed to me extremely improbable, especially on considering the numerous adulterations to which the oil was liable; and accordingly I determined on making a few experiments on the subject, the results of which I beg to forward to you.

For this purpose I applied to my oilman for some specimens of the purest and sweetest lamp oil, and procured several varieties of whale and seal oil, decidedly fishy and rank in flavour, but not rancid or oxydized or putrescent. In fact, the flavour of the oil commonly called "southern oil," the produce of the black whale, which I chiefly employed, is not disagreeable to any one who is free from fancies on the subject; and if mixed with three or four parts of almond oil, is not a whit more offensive to the taste than the common oleum jecoris aselli.

Case 1 and 2. Two brothers, S., aged 3 and 5, flabby pasty children, each suffering from pustular eruption on the head and face. A wound made on the head of one of them a week since had degenerated into a flabby sore. No deficiency of food. Both took a tea-spoonful of seal oil three times a day in lemonade. Their mother reports that they were excessively fond of their medicine; they took it for a fortnight, when the skin of each was quite healthy, and complexion clear.

3. J. W., a pale unhealthy child, aged 2½ years: subject to pustular eruptions on the face. Cured by the same dose of southern oil, thrice daily for a week. Cured far more readily than on former occasions by calomel. Likes the oil extremely well.

4. J. L., a miserable child; glands in neck greatly enlarged; purulent discharge from ears; abdomen swelled and hard. This child got better under the use of seal oil, but did not take it regularly enough to make the case of any value.

5. J. E., aged 2, subject to skin disease from birth; his mother has had syphilis; his complexion peculiarly pasty and sallow. Took southern oil in the above doses for a month. Greatly improved in flesh and complexion; but at the end of the course had an attack of eczema in the arms.

6. W., æt. 30; subject to sciatica. Took the southern oil; is certain that it has done him much good.

7. J. W, æt. 36. Was largely bled for acute rheumatism a twelvemonth since. Has never recovered flesh or strength, and is racked with pains in the neck and shoulders. Took cod-liver oil for a month with benefit last May; left it off during the summer; became thinner and weaker. Took southern oil in the dose of two drachms thrice daily for three weeks; likes it much; feels stronger and looks as decidedly fatter and better in condition as he did from the cod-liver oil.

8. Mrs. P., suffered from puerperal mania whilst suckling, last autumn; has continued anæmic and despondent; has taken every form of mineral and vegetable tonic with temporary benefit. Took southern oil for three weeks; is unmistakeably plumper, clearer in complexion, and in better spirits.

9. J. M., a sallow child, æt. 4, took the southern oil for a week, for impetiginous eruptions on the face and legs. The improvement in flesh and clearness of complexion was extraordinary, and the eruption nearly disappeared.

These few cases do not prove much; but, so far as they go, are satisfactory. No one who had seen the children above mentioned before and after their course of oil, could doubt that a most beneficial change had been wrought by something. The great delight which the little wretches took in their dose is another point worth notice. I would therefore suggest, that it is well worth while to make a fair experiment on a large scale, to determine whether it is fish oil in general that does good, or only the oil of the cod's liver. If, as I believe, almost any kind of fish oil will answer the purpose, then many of the poor will be able to use the cheaper kinds, who could not afford the nicer but more costly cod-liver oil.

Med. Gaz., Nov. 9, 1849, *p.* 880.

166.—VALUE OF COD-LIVER OIL IN THE TREATMENT OF PHTHISIS.

[At the Brompton Hospital for consumption, cod-liver oil has been given very extensively, and in 542 cases its effects have been noted.]

Of these 542 cases, 293 were in the first stage of the disease, and 249 in the second and third, or those stages subsequent to softening. Of those in the first stage 190 were males, and 103 were females; 72 per cent. of the males, and 62 per cent. of the females, had their symptoms materially improved; in nearly 18 per cent. of the males, and in 28 per cent. of the females, the disease was arrested (the term *arrest* implies that all or nearly all of the symptoms of the disease had disappeared, the patients felt themselves well and able to pursue their ordinary occupations); in 10 per cent. of the males, and in nearly 10 per cent. of the females, the disease progressed unchecked. Of the 249 patients in the second stage of the disease, 139 were males, and 110 females; in 53 per cent. of the males, the symptoms were materially improved, and in nearly 61 per cent. of the females. In a little more than 14 per cent. of the males, and in nearly 14 per cent. of the females, the disease was arrested. In a little more than 32 per cent. of the males, and in 25½ per cent. of the females, the disease was not arrested. Viewing these results collectively, we find in about 63 per cent, the symptoms improved; in 18 per cent. the disease was arrested; and in 19 per cent., it went on unchecked. When it is recollected that, of the whole number treated at this hospital, the disease was arrested in only 5 per cent., the value of this remedy, under which the disease appears to have been arrested in 18 per cent. of the cases, must be considered very great.

Different qualities of oil were tried, without exhibiting any marked difference in their remedial effects; but the offensiveness of some of the darker kinds rendered their general use impracticable. The oil now used is straw-coloured, transparent, and free from offensive smell. Patients in general take it without repugnance. The dose at first is 1 drachm three times a day for an adult; but it is gradually increased in some few cases to 1½ oz. for a dose. It is usually administered in camphor-water, any aromatic water, bitter infusions, milk, or any other agreeable fluid. When there is great irritability of stomach, it has been given in mucilage of gum with a few drops of hydrocyanic acid. In cases where there existed great anæmia and debility, and in those where the effect of the oil seemed slight, preparations of quinine and iron, especially the iodide, have been conjoined with advantage. It has appeared advantageous to intermit its use for a few days when nausea and feverishness, from whatever cause produced, are present. In certain cases, the use of the oil has been continued during the existence of slight hæmoptysis, without producing any injurious results.

Other animal oils (not derived from the liver) and vegetable oils, were tried with a view of ascertaining how far their operation resembled that of cod-liver oil. The experiments hitherto made have not shown them to possess the same powers; but they have not been as yet sufficiently often repeated to warrant decided conclusions.

One of the most striking effects of the use of cod-liver oil is an increase in the patient's weight.

It must be observed, that an amelioration of the symptoms did not invariably follow an increase of weight, though the exceptions were rare. An aggravation of the symptoms and a diminution of weight were almost invariable coincidences. In a few cases the symptoms improved, though the weight remained stationary, or even became slightly diminished. In other cases, where the amelioration was still more considerable, and the progress of the disease appeared to have been stayed, relapse occurred, and was followed by a rapid progress to a fatal issue. That such cases do occur requires to be remembered, in order to restrain too sanguine expectations, and to prevent the remedy from falling into the discredit which disappointment after an unlimited confidence may induce. On the other hand, without entering into a description of the successive steps of amelioration experienced by patients, it will suffice to say, that many of the cases included in the 18 per cent., in whom the disease is marked arrested, felt themselves as well as they had been before the attack of the disease.

From these facts, no other conclusion can be drawn than that cod-liver oil possesses the property of controlling the symptoms of pulmonary consumption, if not of arresting the disease, to a greater extent than any agent hitherto tried.—*The First Medical Report of the Hospital for Consumption and Diseases of the Chest, by the Physicians of the Institution. London, 1849.*

Monthly Journal, Nov., 1849, p. 339.

167.—HOW TO COVER THE TASTE OF COD-LIVER OIL.

Now that the swallowing cod-liver oil bids fair to become the fashionable mania of the day, it may be as well to state the simple and effectual means to communicate by M. Fredericq, of disguising its abominable taste. This merely consists in masticating a mosel of dried orange-peel just before and just after swallowing the dose.

British and Foreign Medico-Chirurgical Review, July, 1849, p. 299.

168.—HOW TO REMOVE NITRATE OF SILVER STAINS.

Accident first led M. Martinenq to the observation, which he has since repeatedly confirmed, that the stains produced by nitrate of silver on linen,

&c., may be readily removed by wetting the linen in a solution of *bichloride of mercury* (1 part to 31), rubbing it well, and then washing it well in cold water. *Brit. and For. Med. Chir. Rev., July*, 1849, *p.* 299.

169.—PROPERTIES OF ACONITE.—By M. Teissier.

M. Teissier has undertaken a prolonged series of researches in order to establish, if possible, the therapeutical value of this substance, and especially its *anodyne* and its *antiphlogistic* power. The existence of the former is incontestible, but it differs from opium in giving relief, not as that does to all descriptions of pain, but only to certain kinds of it. This speciality of the action of aconite is one of its characteristics, its anodyne property being only in fact a secondary one. Its principal, and in some measure specific, action is exerted upon the *skin*, eliminating through its vessels injurious principles, and restoring the natural functions when these have been disturbed. Thus aconite is a very appropriate remedy in diseases induced by chills, or when morbid principles are detained in the cutaneous tissues, as in the exanthemata; and M. Teissier has especially derived benefits from its anodyne properties in diseases of rheumatic or catarrhal origin. The antiphlogistic power of the substance is quite subordinated to the influence exerted by it upon the skin, and is especially observed in individuals of a nervous or lymphatic temperament, and those predisposed to rheumatic and cutaneous affections; and in such it is beneficial in lumbago, angina and bronchitis, influenza, rheumatism, especially when recent and not very acute, &c. M. Teissier prefers the *tincture*, to obtain the anodyne effect of which he rapidly increases the dose from ten to twenty drops, to one or two drachms per diem.

Brit. and For. Medico-Chirur. Review, July, 1849, *p.* 299.

170.—PHARMACEUTICAL PREPARATIONS OF MANGANESE.—By M. Hannon.

Oxide of Manganese.—This is a very good preparation, especially when obtained by the humid method; it should therefore be made only when it is wanted for use. The best mode of prescribing it is to add an ounce of simple syrup half a drachm or a drachm of the hydrated oxide, with some oily emulsion, to prevent the contact of the air.

Carbonate of Manganese is best prepared by dissolving seventeen ounces of pure crystallized sulphate of manganese, and nineteen ounces of carbonate of soda, in a sufficient quantity of water. Double decomposition takes place; one ounce of syrup is added to every seventeen ounces of the liquid, and the precipitate is allowed to settle in a well stopped bottle. The supernatant fluid is then decanted off; the precipitate is washed with sugared water, and allowed to drain on a cloth saturated with simple syrup; it is then expressed, mixed with ten ounces of honey, and rapidly evaporated (the access of air being prevented) to a proper consistence for making pills. The sugar and honey oppose the transformation of carbonate of the protoxide of manganese (*carbonate manganeux*) into carbonate of the peroxide (*carbonate manganique*), which is but little soluble in the acids of the stomach. The dose is from four to ten pills, each four grains, every day in chlorotic cases, where iron has not succeeded. The hyperoxidation of the carbonate of manganese may be prevented by adding freshly prepared vegetable charcoal to the pills; it absorbs the carbonic acid which is disengaged by a partial decomposition, and enables the pharmaceutist to dispense with the use of mucilage, which only increases the hardness of the mass.

Neutral Malate of Manganese.—This is procured by treating carbonate of manganese with malic acid. It is an eligible preparation, as the base of the

salt is in the form of protoxide, and the acid is easily digested. The dose is from two to four grains, in pills.

The preparations of manganese have this immense advantage over those of iron, that they can be combined with vegetable tonics and astringents, namely, tannin, and the substances which contain it, as gall-nuts, rhatany, catechu, dragon's blood, kino, monesia, canella, and cinchona. These can all be combined with malate of manganese. *Syrup of malate of manganese* consists of, simple syrup, ℥xvi; malate of manganese, ℥i; essence of lemon, 3ij: an ounce of syrup contains 29 grains of malate of manganese. *Pills of malate of manganese.* Malate of manganese, gr. xv; powder of cinchona, gr. xv; honey, a sufficient quantity to make twenty pills. *Lozenges of malate of manganese.* Malate of manganese, ℥i; sugar, ℥xi; mucilage of tragacanth, a sufficient quantity. To be formed into lozenges, each 12 grains in weight; each of which contains a grain of the salt.

Tartrate of manganese is prepared in the same way as the malate, tartaric acid being used. It may be substituted for the malate in all the above mentioned formulæ; and is used to prepare the following highly tonic syrup. Syrup of tolu, ℥xvii; extract of rhatany, 3iiss; tartrate of manganese, 3iiss. Dose, from four to five spoonfuls daily.

Phosphate of manganese is best prepared by dropping a solution of phosphate of soda into a solution of sulphate of manganese. The precipitate is collected after filtration, dried, and preserved in well stopped bottles.

This preparation may be employed, like the phosphate of iron, in cancerous affections. *Pills of phosphate of manganese.* Phosphate of manganese, 3 iss; powder of cinchona, 3 ss; syrup of catechu, a sufficient quantity. To be divided into four-grain pills. *Syrup of phosphate of manganese.* Phosphate of manganese. 3 ss; syrup of tolu, ℥ iii, 3 iii; syrup of cinchona, ℥ v; essence of lemon, 3 iss; powder of tragacanth, gr. x. This preparation must be made quickly, and preserved in a well-stopped bottle. *Lozenges of phosphate of manganese.* Phosphate of manganese, ℥i; sugar, ℥xii. Mix and divide in twelve-grain lozenges, each containing one grain of the phosphate.

Iodide of Manganese is prepared by digesting recently precipitated carbonate of manganese with fresh hydriodic acid; then filtering, and evaporating, the access of air being prevented. It may more conveniently be prepared extemporaneously, by mixing together an ounce of iodide of potassium, and the same quantity of sulphate of manganese, perfectly dried, and in the state of powder. It is then made into a pill-mass with honey, and divided into pills, each containing four grains of the iodide; which should be kept in a well-stopped bottle. The dose is at first one pill daily, gradually increased every three days, to six pills; the medicine is then omitted for eight days, after which is resumed again. *Syrup of iodide of manganese* is prepared by adding concentrated hydriodic acid to a drachm of perfectly pure hydrated carbonade of manganese, until it be entirely dissolved; then mixing with the solution 17 oz. of a syrup of guaiacum and sarsaparilla. Dose, from two to six spoonfuls daily.

In cases where iron has not succeeded, it is desirable not to make a sudden transition to manganese, but to combine the two remedies as in the following formula. Pure crystallized sulphate of iron, ℥ xiii.; pure sulphate of manganese, ℥ iiiss.; pure carbonate of soda, ℥ xviiss.; honey, ℥ x.; syrup as much as may be sufficient to make a mass to be divided into four-grain pills. Dose from two to ten pills daily. The insoluble preparations of manganese should be first used, as the carbonate, phosphate, and oxyde: then the more soluble preparations, the tartrate, malate, &c., may be employed. The use of this medicine should not be persevered in so long as that of iron, as its preparations are more rapidly assimilated. Manganese is not, like iron, found in the excrements of persons who take it—at least it is in very small quantity.

In the depraved state of the blood which succeeds intermittent fevers, manganese is useful; it is the most certain remedy for preventing a return of the attacks. Leucophlegmasia and engorged spleen, of long duration,

are rapidly reduced by the use of iodide of manganese with syrup of cinchona. The preparations of manganese should also be used in urethro vaginal catarrh in chlorotic patients, and in chronic blennorrhœa, especially in individuals weakened and rendered anæmic by excess. The salts of manganese with which we are acquainted, are powerfully astringent, and may be used as external applications, in all cases where other astringents are not indicated. In this respect they possess no other peculiarity.

London Journal of Medicine, Sept. 1849, *p.* 681.

171.—CANTHARIDAL COLLODION FOR BLISTERS.

[M. Hesch, of St. Petersburgh, recommends the following preparation as a vesicatory, when it is needed to apply one where it will not be disturbed by the movements of the patient]

The cantharidal collodion is thus prepared;—Exhaust, by the displacement process, one pound of coarsely powdered cantharides by one pound of sulphuric ether and three ounces of acetic ether: in this way is obtained a saturated solution of cantharides, along with the green animal fatty matter. Dissolve twenty-five grains of cotton-powder in two ounces of this liquid, and preserve it for use, in well stopped bottles. When a blister is required, it will be sufficient to smear with this fluid the surface to be vesicated. *London Journal, Oct.* 1849, *p.* 962.

172.—PAPAVERINE, A NEW ALKALOID OBTAINED FROM OPIUM.

Dr. G. Merck has obtained from the residuum left after the preparation of morphia, a new alkaloid which he calls papaverine. It presents prismatic crystals of a very regular form, and quite white; very soluble in warm ether or alcohol, but hardly soluble in these liquids when cold, and quite insoluble in water. Papaverine reddens litmus paper, turns dahlia paper green, and forms well determined salts with acids; the hydrochlorate being particularly remarkable for the beauty of its crystals. When papaverine, is rubbed up with concentrated sulphuric acid, it assumes a very characteristic tint. When a large excess of hydrochloric acid is poured on a solution of papaverine, a very heavy oil is thrown down, which forms in a few hours a crystalline mass; this dissolves in boiling water, in which, on cooling, forms prismatic deposits which have no acid re-action. When these prisms are again treated by an excess of hydrochloric acid, they produce the same oil obtained before. This latter may, however be thrown down by using either sulphuric or nitric acid in the above-mentioned manner. The chloroplatinate of papaverine is yellow, pulverent, and insoluble. The formula of papaverine, calculated according to the composition of the hydrochlorate and chloroplatinate is $C_{40}\ H_{21}\ N\ O_9$ —*Gaz. des Hopitaux. Lancet, Aug.* 4, 1849, *p.* 135.

173.—USE OF THE LEECH AS A WEATHER-PROPHET.—By W. H. Attree, Esq., late House-Surgeon to the Middlesex Hospital.

[The poet Cowper has mentioned the leech as a weather-prophet, asserting that "no change of the weather surprises him, and in point of the earliest and most accurate intelligence, he is worth all the barometers in the world." Mr. Attree has verified the truth of this statement, and gives the following observations which he has made upon the subject:]

1. If the weather proves serene and beautiful, the leech lies motionless at the bottom of the glass, rolled together in a spiral form. 2. If it rains either before or after noon, it is found crept up to the top of its lodging, and there remains until the weather is settled. 3. If we are to have wind,

the poor prisoner gallops through its limpid habitation with amazing swiftness, and seldom rests till it begins to blow hard. 4. If a remarkable storm of thunder and rain is to succeed, for some days before, it lodges almost continually without water, and discovers uncommon uneasiness in violent throes, and convulsive-like motions. 5. In the frost, as in the clear summer weather, it lies constantly at the bottom; and in snow, as in rainy weather, it pitches its dwelling upon the mouth of the phial. 6. Perhaps it may not be amiss to state, lest any of the curious should try the experiment, that the leech was kept in a common two-ounce phial about three-fourths filled with water, and covered with a bit of linen rag. In the summer the water is changed once a week, and in the winter once a fortnight. This is a weather-glass which may be purchased at a trifling expense. *Med. Gaz. July 6, 1849, p. 41.*

174.—ANIMAL CHARCOAL AS AN ANTIDOTE TO POISONS.—By Dr. B. H. Rand, Philadelphia.

In the "Transactions" of the Medical Society of London, new series, Vol. i., is a paper, by Dr. A. B. Garrod, detailing some experiments, in which he employed purified animal charcoal as an antidote. This is prepared from ivory black, by digesting it in dilute chlorohydric acid to remove the earthy matters, afterwards washing and heating it to redness in a covered crucible. The subjects of his experiments were dogs rabbits, and guinea-pigs. He administered large doses of opium, belladonna, aconite, nux vomica, delphinium, stavesacre, white hellebore, and their alkaloids, as well as digitalis, hemlock, tobacco, elaterium, ipecacuanha, hydrocyanic acid, cantharides, and arsenious acid, without injurious consequences, when sufficient animal charcoal was given simultaneously with them, or, in some cases, before the peculiar effects of the drug were developed. It also prevented, but less completely, the action of the bichloride of mercury, and of the salts of copper and lead.

Dr. Garrod concludes from his experiments:

1st. That animal charcoal has the power of combining in the stomach with the poisonous principles of animal and vegetable substances, and that the compounds thus produced are innoxious; therefore, when given before these poisons have become absorbed, it will act as an antidote.

2nd. That animal charcoal will absorb some mineral substances, and render them inert; but so large a quantity of the charcoal is required, that it is not so well adaped for many poisons of this class as their own special antidotes; the effects of arsenic, however, appear to be better combated by this than by any other article.

3d. That a certain amount of animal charcoal is required, about half an once to each grain of morphia, strychnia, or any other alkaloid; but of course, much less for the substances from which they are obtained, as opium, nux vomica, &c., a scruple of nux vomica not requiring more than half an ounce of charcoal.

4th. That the antidote itself exerts no injurious action on the body.

The method of preparing pure animal-charcoal from ivory black, before mentioned, is tedious and wasteful, only ten per cent. being obtained, while the amount of acid used is considerable. A very good and pure charcoal is obtained by calcining leather scraps or blood with pearl-ash, washing and re-heating in a close crucible—it was this kind of charcoal which was principally used in the experiments to be detailed. Much of the discrepancy of experimenters with this substance is undoubtedly due to their use of an impure specimen of it.

With a view of ascertaining more accurately the value of the proposed antidote, the writer performed a number of experiments, from which the following are selected as having the most direct bearing upon the subject:—

1 One grain of pure morphia was swallowed with about an ounce of

pure animal charcoal, in warm water; no narcotic symptoms supervened, but there was some gastric irritation, which subsided in the course of the day.

2. One grain of sulphate of morphia was digested with pure animal charcoal until all bitterness was removed; the liquid filtered off and swallowed, produced no effect.

3. Ten grains of extract of belladonna were swallowed with two drachms of the charcoal; there followed vertigo, dilated pupils, dimness of vision, exceeding dryness of the throat, and desire to sleep, all of which symptoms were relieved by the spontaneous vomiting of a very acid matter, and the use of stimuli. The pupil remained dilated through part of the next day.

4. The last experiment was repeated, an antacid having been premised, and the proportion of charcoal being doubled. Some dryness of the throat followed, but with no other symptom of the influence of the drug.

5. Fifteen grains of powdered digitalis were taken, with three drachms of the animal charcoal, without the slightest disturbance of the functions.

6. Twelve drops of the officinal hydrocyanic acid were swallowed, with two drachms of the pure charcoal, without a sedative result.

7. One grain of strychnia, dissolved by the aid of a drop of chlorohydric acid, was digested with animal charcoal until all bitterness was removed. The solution, filtered and swallowed, produced no effect; a similar solution, evaporated and tested with nitric acid, gave no red tinge.

8. One grain of strychnia was swallowed with an ounce of pure animal charcoal; no effects due to the strychnia could be perceived.

9. The purgative extracts were next tried, but produced no effect when sufficient animal charcoal was taken.

10. Camphor and musk were removed by animal charcoal from their tinctures, so far that they did not precipitate on the addition of water.

11. Phosphorus was removed from its ethereal solution by the charcoal.

12. Iodine was so far removed from its tincture and compound solution as not to strike a blue colour with starch; and the iodine could not be liberated from the animal charcoal at a red heat.

13. Arsenious acid and a solution of arsenite of potassa were apparently unaffected, either in the hot or cold solution, by animal charcoal. This result, although it agrees with those of MM. Wapen and Graham, does not with the observations of Dr. Garrod, who states that animal charcoal "has greater power of removing arsenic from its solution than the hydrated sesqui-oxide of iron."

14. A solution of the bichloride of mercury, being treated with animal charcoal, gave, on filtration, no precipitate with ammonia.

In conclusion, we are perhaps justified in drawing, from the present state of our knowledge on this subject, the following conclusions:—

1st. That animal charcoal has the power of withdrawing, when used at a proper temperature and in sufficient quantity, most, if not all, known vegetable and animal poisonous principles, and certain mineral poisons from their solutions.

2d. That, given at the same time with, or shortly after these poisons have been swallowed, it prevents their deleterious action.

3d. That given in cases of poisoning, it can exert no injurious influence, but, on the other hand, promotes vomiting, entangles the poison, and protects the coats of the stomach against it.

4th. That although it cannot be substituted for the usual antidotes in poisoning by mineral substances, yet it may be usefully employed in conjunction with them, or in their absence.—*Medical Examiner*, Sept. 1848.

Monthly Retrospect, June, 1849, *p.* 133.

175.—CALCINED MAGNESIA AN ANTIDOTE FOR ARSENIC.—By Dr. E. Bissel, Norwalk, U. S.

[Dr. Bissel was sent for to a young man, 27 years of age, who had taken not far from a scruple of arsenic. When he arrived, the patient had taken emetics of sulphate of zinc and of infusion of tobacco, and had vomited freely. At this time Dr. B. says:]

His pulse was one hundred and thirty per minute, small and wiry. He complained of great constriction and dryness of the fauces, but chiefly of a most agonizing pain and burning in the stomach; it seeming, as he expressed it, "as if it were filled with burning coals." As nearly three hours had now elapsed since the poison had entered the stomach, I considered that any further effort to evacuate it would be futile, and, that if life was saved at all, it must be by the antidotal power of some medicinal agent. Having had my attention directed to the experiments of Professor Peter, of Transylvania University, and the case of Lepage published in January and April numbers of this Journal, in 1847, I determined to give the calcined magnesia a fair trial, and accordingly put it up in drachm doses, to be given every hour mixed in milk and water. During the hour which I remained with him, his symptoms were becoming more unfavourable. The pulse was one hundred and fifty per minute; the constriction and dryness of the fauces extreme; the whole surface bedewed with perspiration; the pain and burning sensation in the stomach seemed augmented to the highest possible degree, whilst the right hand was entirely paralysed; in short everything betokened a speedy dissolution. I left him at 10 o'clock, in charge of the mistress of the family, whom I knew to be a faithful and intelligent nurse. On visiting him the next morning, instead of finding him dead as I much feared, I was most happily surprised to find him very quietly dosing in an easy chair. I learned from the lady, who had been unremitting in her care of him during the whole night, that in a very few minutes (not more than five or ten) after taking the first dose of magnesia, he said he felt much relieved, and before the time for the second dose, he had fallen into a doze. She stated that each successive dose had produced the most surprising and marked mitigation of every symptom, and that long before morning he was entirely freed from suffering, and had, on the whole, passed a quiet and comfortable night. The bowels had moved freely and easily twice during the time. He complained of nothing save a general weakness, and a sort of faintness at the pit of the stomach. The right hand had recovered its power, and the pulse had fallen to eighty-five per minute. Directed to continue the magnesia through the day, once in four hours, and to give light nourishment. I have since learned, that in a very few days he resumed his labour upon the farm, and felt no inconvenience from what he had taken, except a muscular weakness of the lower extremities, which was not very great. *Monthly Retrospect, June*, 1849, p. 136.

176.—USE OF DUTCH LIQUID.—By Dr. J. Snow.

Dutch liquid is much slower in its action than chloroform; and whilst the chief endeavour in giving chloroform is to prevent the air from getting too strongly charged with the vapour, in giving Dutch liquid the endeavour is to get the air to take up sufficient of it. In one case, indeed, that of an infant in King's College Hospital, on which Mr. Fergusson operated for nævus, it failed to induce insensibility with the inhaler I was using (one contrived for chloroform) although continued for three or four minutes, and rather than cause further delay chloroform was used.

For reasons similar to those which render Dutch liquid slower in its action, when its effects are once produced they are more peristent than those

of chloroform. Medicines so volatile as these escape from the system almost exclusively by the lungs; and as the quantity of Dutch liquid in the blood during insensibility is greater than that of chloroform, it would be longer in escaping, even if it could be exhaled at the same rate; but, being less volatile it cannot. There is a continued tendency to equilibrium between the elastic force of the vapour in the blood and that in the air contained in the pulmonary cells; and if the blood contain, for instance, one thirtieth part as much of a volatile liquid as it could dissolve, each cubic inch of air which reaches the cells of the lungs is capable of taking up one-thirtieth part as much as would saturate it at 100°; but this quantity is twice as great in the case of chloroform as in that of Dutch liquid. The longer duration of the effects of the latter substance as compared with the former has been very marked in a number of experiments on animals as well as in practice.

Although, as above stated, a greater quantity of Dutch liquid than of chloroform is required to induce insensibility in the first instance, yet in cases requiring the continued inhalation of the vapour, there is but little difference in the amount used; since, from the more persistent effect of Dutch liquid, it does not require to be repeated so often.

The result of my observations and investigations is, that I cannot unite with Mr. Nunneley in his general praises of Dutch liquid. The only advantages which it possesses over chloroform, in any case, are such as are connected with its slower action and more persistent effects,—properties that Mr. Nunneley failed to recognize. In all other respects its effects appear to be the same as that of chloroform. It is undoubtedly a very safe anæsthetic; but I doubt very much whether practitioners would be content to wait for its slower action, after they have been accustomed to use chloroform, even if it could be obtained at the same cost, of which there is no prospect. In whatever way Dutch liquid might be used, it would not suddenly occasion a fatal accident without giving due warning; in this respect it resembles ether. Advantage might be taken of its more persistent effect in some operations in the face, in which it is difficult to administer a vapour after the surgeon commences; and also in cases where the operator is without an assistant, and has to make his patient insensible first, and then to perform his operation. In obstetric practice it would perhaps be more convenient than chloroform, when only one medical man is present, as he might intrust the inhaler to the nurse, and look up two or three times in a minute to give directions; but when there is a practitioner entirely to superintend the inhalation, chloroform has the advantage, as it can be given to the requisite extent just as each pain commences, and the patient can be allowed to recover from its effects, more or less, between every pain. *Med. Gaz. Aug.* 17, 1849, *p.* 274.

177—FORM OF FATTY DEGENERATION OF THE HEART.—By Dr. E. L. Ormerod.

[At p. 308, of our Sixteenth Vol., will be found an interesting article by Mr. Paget, on fatty degeneration of the heart. In the following paper, Dr. Ormerod, who was Mr. Paget's fellow-labourer in this inquiry, enters more into detail concerning one form of the disease. He says:]

Fatty degeneration may occur under two conditions—viz. as a primary or a secondary affection. Primarily, it may occur in a part which is no longer wanted, as in the muscles of aged or crippled limbs, and in the structure of crippled organs. Such a change we see best in the bodies of some old people. The parts which are no longer wanted are not simply atrophied, but converted gradually into fat, and the blood apparently is so overloaded with this ingredient that it fails to remove the fat from those parts which are in earlier years naturally padded or distended with this substance. So

the body retains, in many respects, the form and plumpness of youth, but the texture is flabby, and the colour pale, for the want of blood and muscle to give it the hue and firmness of youthful life.

The other condition frequently connected with this peculiar form of atrophy, which may then be called secondary, is the previous occurrence of chronic inflammation in this part. Here, as in the former case, we must look to the general habit of the individual for some share of the explanation; but the fact of the one being occasionally ingrafted on the effects, or accompanying the progress of the other, rests on the best evidence. This is most commonly seen, as might be expected, in internal organs. Probably the same cause which has induced inflammation, has itself, in a very large majority of cases, given a tendency to fatty degeneration *of the* particular organs. Of the nature of this fatty degeneration, under whatever circumstances, there can be no doubt; it is essentially an atrophy, whereby the most highly organized elements of the body are replaced by one of the simplest. It is not that the substances are changed into fat, that is plainly impossible, but that the nutritive processes of muscle, or gland, or bone, no longer restore particle for particle whatever is lost by the daily use of the parts, but replace it with oil. Nutrition goes on in some sort, but the additions are of matters wholly unsuited to the office of those that that they have replaced: they can neither move nor secrete, nor even mechanically support the weight of the body.

There are three forms in which fatty disease of the heart may occur:—

1st. In the first form the fat is accumulated in those parts where it is naturally deposited in the greatest abundance, as at the base of the heart. This is met with in those persons who have a general tendency to accumulate fat; and to this form, probably, most of what are called fat hearts belong. It is certainly a condition of disease, but probably not an important one, and needs no additional illustration here.

2d. In the next form the fat collects chiefly about the apex of the heart (Laennec, Auscult, Médiate, tome iiii, p. 225). The deposit begins from without, and is not attended with so great an enlargement of the heart as in the form first described; for the fat is deposited at the expense of the muscular tissue—in its place, not merely laid upon it. Moreover, the degeneration is partial, and in patches, not general. This tendency to limit itself to particular spots is seen most characteristically in those cases where a single carnea columna is converted into adipose tissue, but still preserves the form of the muscular band whose place it has usurped. This form occurs in persons who have, as is popularly said, an unhealthy disposition to grow fat; in those where the fat has generally throughout the body, as in the heart, a tendency to accumulate in the place of, not in addition to, the proper structures. The disease is, in some sense, the degeneration in this form, but not perhaps so strictly as in the form remaining to be described, the proper subject of these remarks. To this second form belong nearly all the cases, as far as I am able to judge, described as examples of fatty disease of the heart. This fact in itself bespeaks the much greater importance of the second than of the first form; for there the change in the heart is commonly described as a morbid appearance among many others; here it is the change on which the interest of the case is made to turn.

Dr. Cheyne, and other Dublin practitioners, among whom the disease has excited a good deal of interest, have recorded cases of this description. But instead of repeating one of their well-known cases, the following, for which I am indebted to my friend, Dr. Kirkes, will serve as an excellent illustration:—

Sudden death—fatty degeneration of the heart.—A German clock-maker, a powerful well-built man, applied for admission at St. Bartholomew's Hospital, in August, 1847, and he looked so pale and ill that the only empty bed in the house was given him, though a fever patient had to be refused admission.

His friends said that he had always had remarkably good health, and that he was a man of great strength and powers of endurance. But within the last year he had been subject to occasional fits, during which he lost consciousness, fell, and struggled for a short while. He had one such fit ten days ago. His face was now pale; his expression languid; his gait tottering; pulse thrilling, occasionally irregular. He said he had no uneasiness in the chest only he had wandering pains, with a sense of fainting and debility.

He was put to bed, and lay quiet and unnoticed that evening and night. Early on the following morning the nurse found him quite dead in the bed.

On examination of the body thirty-six hours after death, the limbs were still rather rigid. A large quantity of fluid blood escaped from the divided cerebral vessels; the brain itself was healthy. Nothing particular was observed in the lungs, or in the abdominal viscera.

The heart was rather larger than natural; it was marked with two "white patches" externally; it felt like a loose bag, its walls being quite flaccid, and it was already partly decomposed; its walls interiorly being stained by the dark grumous blood which it contained. The right side of the heart was of the natural size, though the auricle was just then distended with blood. The left cavities were smaller than natural. On close examination, the heart appeared as if entirely overlaid with a layer of dirty-yellowish fat, separated by a distinct boundary from the muscular substance of the organ; but the muscular tissue itself was pale, like dead leaves, contrasting forcibly with the bright red colour of his abdominal muscles.

The rapid decomposition which a portion of the heart set apart for the purpose underwent, vitiates any conclusions from the microscopic examination. A piece of abdominal muscle, from the same subject, had, in the same time, undergone no change.

For the present, let this brief summary and this single example suffice for this very common, yet very terrible form of the disease.

The third form of disease was first, as far as I am aware, described by Rokitansky, who speaks of it as affecting the heart by preference; then next in order of frequency, the voluntary muscles, and sometimes, though very rarely, the involuntary muscles,—as for instance, the coats of the gall-bladder. The subject has been also investigated by Mr. Paget with his usual ability. To his description of the morbid appearances I have nothing to add, and have only to offer my humble confirmation of the correctness of his remark that the fatty matter is partly within, and not wholly external to, the sarcolemma, as described by Rokitansky. But I cannot omit to acknowledge the extreme pleasure and advantage I have derived from the assistance of Mr. Paget, as well on the occasion of working out this part of the subject, as always on other occasions, whenever the direction of his pathological researches has happily coincided with mine.

To the unassisted eye, the muscular substance of a healthy heart presents characters distinguishing it from ordinary muscular tissue; *for* it is more compact and homogeneous, and not loosely divided into bundles of fibres, as in ordinary muscle. Under the microscope it also presents some striking differences, the transverse striæ being less distinctly marked, and the fibres having a singular granular appearance. It is very important to notice this normal difference at the outset; for the first step towards fatty degeneration consists in the loss of continuity of the transverse striæ, and in the increase of this granular marking of the fibres, which would seem to be in some degree their normal appearance.

This is the first step, and, as wholly undiscoverable by the naked eye, may often pass unnoticed, unless something in the symptoms, or some change in the general condition of the heart, call particular attention to that organ. Such conditions may be, a small pale, flabby state of the heart, not inaptly compared to the colour of withered leaves, and to the feel of a moist glove. But such are not commonly the signs which call attention to

the existence of this structural change; they are ordinarily much more obvious.

On opening a heart thus affected, the interior of the ventricles appears to be mottled over with buff-coloured spots of a singular zigzag form. The same may be noticed beneath the pericardium also; and in extreme cases the same appearance is found, on section, to pervade the whole thickness of the walls of the ventricles and of the carneæ columnæ. Of these latter the *musculi papillares* seem most liable to be affected. Not to say that this form of disease never occurs in the walls of the auricles,—at least, I have never seen it there.

Microscopic examination reveals the nature of these spots; they are not deposits, but distinctly degenerated muscular fibres; the outline, not merely of the masses but of each single fibril, is accurately preserved. Instead, however, of transverse striæ and nuclei—the evidences of active vitality—there is little to be seen but a congeries of oil globules. The whole history of the degeneration may be traced in one of these little spots. First, from the immediate neighbourhood of the spot we may obtain healthy muscular fibre: then the transverse striæ becomes less distinct; they are rows of dots rather than continuous lines; then the intervals between the dots become wider, and the dots themselves run into longitudinal rather than transverse lines; and then all regularity is lost, and the dots appear to stud the surface all over, like the points on a bit of fish-skin. Probably long before this time the fibre has lost all its properties as a muscle: but there are further changes to observe; for now, mixed with these minute dots, are to be seen small oil-globules, which increase and coalesce till the fibril presents little else but a congeries of oil-drops contained within the sarcolemma.

This is not the only change which the fibres undergo; for, with whatever care they are disintegrated, they are found to be short, and as if unusually brittle—a general condition which may, perhaps, be of more serious importance than the actual fatty degeneration of the organ.

Such are the most common features of the disease, and sufficiently obvious, when noticed, to prevent their being readily overlooked afterwards. But we must not rely too exclusively upon them; for, as already observed, in the absence of these little spots marking the extreme degree of fatty degeneration in single points, the disease may have pervaded the whole substance of the heart; and the recognition of such a change will be the more difficult in exact proportion to its extent, and therefore its importance, from the want of healthy issue wherewith to contrast the diseased fibres. And there is no solution to the difficulty except in the use of the microscope, whose information, should anything casually induce us to solicit it, on this subject at least is infallible.

It is perhaps almost needless to provide against such a misinterpretation as that this should be presumed to be an ordinary change of the heart. The following, however, has been chosen, in this view, as an illustration of what may be called fibrous degeneration of the heart, where, mixed with the atrophied muscular tissue, are the products of previous inflammation.

Angina pectoris—Sudden death—Aneurism of the left ventricle—fibrous degeneration of the heart.—A clergyman, aged 45, of sedentary studious habits, inclined to grow fat, though abstemious to a degree, for the last two years of his life was subject to paroxysms of pain in the region of the heart. The first paroxysm occurred on occasion of some mental anxiety; then he used to suffer them about once a month, and latterly almost daily.

There was no valvular murmur, only the heart's sounds were loud and ringing. He found more relief from constant mental employment, and from the practice of abstinence to a degree which most would call starvation, than from anything else. One morning he was found dead by the side of his bed.

On examination of the body after death, with Dr. Jeaffreson and Mr. R. Eyles, besides a few slight morbid changes irrelevant to the present subject,—

The heart was found large, weighing ℥ xij.; there was a slight degree of general vascular injection of the pericardium, which contained ℥ij. of clear fluid. The right side was healthy. The left valves were efficient, but thickened. The walls of the left auricle were thickened; the left ventricle was rounded at the apex, which projected far beyond the right. In a space of about an inch in diameter, on the front of this ventricle, the walls were very thin, and could easily be made to bulge. The substance of the heart here was injected, but tough, and chiefly made up of cellular tissue. The carneæ columnæ hereabouts, and those leading to the right side of Lieutaud's valve, were pale and white, being composed in chief part of fibrous tissue, the fibres being long, straight, and parallel, mixed with only a few proper muscular fibrils. Elsewhere the fibres of the heart were long, straight, well coloured, and the transverse striæ well marked. There was no fatty degeneration anywhere.

The aorta was thick and uneven, with a few calcareous plates, and with the lining membrane removed in a few places.

In many respects, then, the anatomical history of fatty degeneration of the heart appears to be complete. We can trace it from its earliest beginnings to the entire disintegration of the muscular structure. It is a specific change with as distinctly marked characters as have any of those diseases of which we have cognizance by the eye or ear—tubercle or pneumonia, for instance. There are some points, however, which observation has yet to supply; for there are ulterior changes in the muscular structure of the heart—perforations, rupture, and apparent loss of substance,—which experience has not yet shown to be strictly the results of fatty degeneration, however probable the general circumstances may have made it that such will be found to be the case on more extended inquiry.

Med. Gaz., Nov. 2, 1849, p. 739.

178.—TREATMENT OF PSORIASIS AND PITYRIASIS.—By Dr. J. M. Neligan, Physician to Jervis-Street Hospital, Dublin.

[While allowing the remedial efficacy of arsenic in these diseases, Dr. Neligan maintains that its beneficial action is more speedy and decided where it is employed together with iodine or iodide of potassium; and that the latter medicine alone is of great value in those cases in which arsenic disagrees. He relates the case of a gentleman affected for many years with inveterate psoriasis, to whom he gave this medicine with great advantage. He says:]

The plan of treatment which I prescribed for this gentleman consisted in the administration of five grains of iodide of potassium, dissolved in two ounces of a decoction of the fresh inner bark of the elm, taken every night at bed-time, and the employment of a fresh-water bath at the temperature of 92° F., at first three times, and afterwards twice weekly. In his case it is probable that the arsenical preparations might have acted equally beneficially, but he had an insuperable objection to take arsenic in any form; and from my previous experience of the good effects of the iodide of potassium in many cases where arsenic failed to cure the disease. I confidently adopted its use, and the result has proved that I did not overrate it as a remedy for inveterate psoriasis.

Donovan's solution of the hydriodate of arsenic and mercury has been extensively employed in the treatment of this class of cutaneous eruptions, and the pages of the former series of this Journal bear ample testimony to its good effects. I must however, confess that I am not partial to the employment of any mercurial preparation in their treatment, when they affect the body generally: and the only local form of scaly diseases, in which I have found a mercurial of use is in pityriasis of the scalp, as I

mentioned in a former essay, and in it I still find the yellow iodide of mercury productive of the best results.

The iodide of arsenic has also been found a remedy of decided efficacy in the treatment of these affections; it was first generally employed for them by the late Dr. Anthony Todd Thomson of London, and the testimony of those who have used it is confirmatory of his observations. My own experience leads me to place more reliance on it than any other preparation of arsenic; but, although I have found it, when administered alone, capable of curing many cases of psoriasis and lepra, I consider that its beneficial action is much augmented by combining it with the iodide of potassium, and with iodine in the form I shall hereafter describe. The following case is selected from many, as a proof of the effects of this remedy in producing a permanent cure. It was reported by Dr. T. W. Christie, now of Sidmouth.

Daniel Callaghan, nineteen years of age, a baker by trade, of middle stature and sanguine temperament, was admitted into Jervis-street Hospital, February 7, 1843, affected with psoriasis inveterata. The greater part of his body, and particularly his legs and arms, is covered with an eruption consisting, in some places, of small circular scales, and in others, of large irregular patches coated with white scales, and having an elevated border. There is an abundant desquamation of the cuticle, especially from the lower extremities. The scalp is also affected, but the spots there seem to be more circumscribed. The tongue is rather clean; the bowels constipated; the appetite good, but he states that his strength is latterly much diminished.

From his own account, he was always healthy previously to his becoming a baker (about five years since); eighteen months subsequently to which period, having lived intemperately while exposed to the great alterations of temperature inseparable from his trade, his present disease made its appearance. It came on in the form of minute, red, elevated spots, about the size of a small pea, extremely itchy, and rendered more so by heat; they did not exude any moisture except when severely scratched; scales soon formed on them, which continually fell off, but to be renewed by others; and rapidly spreading, they soon covered the whole of his body, except the face and hands, which have but partially suffered. He has been treated by various medical men during the last three years, but he has never reeeived more than partial benefit from the many remedies tried on him. On admission he was ordered a warm bath and a purgative medicine, and the next day a twelfth of a grain of the iodide of arsenic, made into a pill with liquorice powder, was prescribed for him, to be taken three times daily. This treatment was continued, the dose of the iodide of arsenic having been gradually increased to a sixth of a grain three times daily, until the 3d of May, when he was discharged from the hospital without a trace of the disease remaining. The medicine had occasionally to be omitted for a few days, when the system gave evidence of being saturated with it, and the symptoms then produced were readily removed by an active saline purgative, and the omission of the iodide, generally for two or three days.

This patient, during the entire time that he was in hospital, was kept strictly on milk diet.

This case is a good example of those in which the iodide of arsenic alone effects a a rapid and permanent cure; but unfortunately in most instances, it does not produce such decided beneficial results; and when, after a fair trial of it, I find that the disease is not disappearing, I generally combine it with iodine and the iodide of potassium, or, omitting it altogether, give the latter medicine in the decoction of elm bark; and in very obstinate cases I administer them alternately, usually every second fortnight.

[After again insisting upon the importance of strict adherence to a milk diet, and mentioning the value of tepid baths administered twice or thrice a week, as adjuncts in the treatment, Dr. Neligan says:]

I have already stated that I have derived excellent effects in the treatment of squamous eruptions from a combination of the iodide of potassium with arsenic and with iodine.

Commencing the treatment, as I usually do, with the iodide of arsenic, where nothing forbids its use, after it has been continued for a month or six weeks, I order a mixture containing two drachms of the liquor arsenicalis, two drachms of simple syrup, five ounces and a half of distilled water, and half a drachm of iodide of potassium. Of this mixture, I prescribe, at first, a dessert-spoonful three times daily, in a glass of *eau sucree*, directing it to be taken after meals. This quantity contains five drops of the arsenical solution, and a grain and a quarter of iodide of potassium. To it I sometimes, in very inveterate cases, or after it has been continued, in gradually increased doses, for some weeks, without decided effect being produced, add six grains of iodine,—a fourth of a grain to each dose. The mixture, then, chemically speaking, is a solution of the iodureted iodide of potassium and arsenic. When iodine is added in this proportion to the mixture, I use syrup undiluted as the menstruum, and then direct the dose to be taken in plain water. If a flavoured syrup be employed, the mixture is far from being disagreeable. After numerous trials made for me by Mr. Oldham, of Grafton street, I find that syrup of capillaire most completely conceals the odour and taste of the iodine.

The only other preparations of arsenic that I have been in the habit of employing in the treatment of those eruptions, are the arseniate of ammonia and the arseniate of soda. Both are apt to disorder the stomach, the latter especially so; yet they are sometimes productive of good effects, particularly in the local forms of psoriasis, as in psoriasis palmaria. The arseniate of ammonia I always use first, and generally alternate with it the arseniate of soda. They are best given in solution. The formula I prescribe is somewhat similar to that proposed by Biett, consisting of one grain and a half of the arseniate of ammonia dissolved in three ounces of water, to which are added six drachms of spirit of cinnamon, or of compound spirit of aniseed. The dose of this mixture is one drachm, which contains a twentieth of a grain of the arseniate, and it is gradually increased to two or three drachms three times daily, beyond which dose I do not find it safe or useful to venture. It is best taken in a little plain water, and either during or after meals.

In addition to the use of internal remedies, I always employ external applications in the treatment of psoriasis palmaria, and of the other local forms of the eruption. Iodide of sulphur, in the form of ointment, I have found productive of the best effects, but it must be used very much diluted in the first instance, and the strength of the ointment gradually increased. Not more than eight grains to the ounce of wax cerate should be prescribed in the commencement of the treatment, and the proportion should never be greater than twenty grains to the ounce. The parts affected should be washed, at least three times daily, with a weak solution of the carbonate of soda, half a drachm to a pint of distilled water, and well dried afterwards, previous to the renewed application of the ointment.

As regards pityriasis, when it affects the body generally I treat it, if of short standing, as a mildly inflammatory affection, prescribing gentle saline purgatives twice or three times a week; an alkaline bath,—four ounces of carbonate of soda in sufficient fresh water for an ordinary bath, at the temperature of 80° to 92° F. according to the season of the year,—every second day, and in strong constitutions an occasional bleeding, either general or by the application of half a dozen leeches to the verge of the anus. But when the disease becomes chronic, I use the same treatment as I have above described for psoriasis; it must be remembered that the alkaline bath is not so useful in the chronic as in the acute stage of the affection. The local forms of the disease are, I think, best treated on the plan I have proposed for the eruption when it affects the scalp. The chief additional observation

my subsequent experience enables me to offer on the local disease is, that it is of a much more inflammatory character in persons from the age of 12 to 35 than in the very young or the old, and consequently that the use of the mildest local stimulant in them will often cause a marked aggravation of the symptoms, and is therefore scarcely, if at all, admissible in its treatment.

I have found pityriasis a more obstinate eruption to treat than psoriasis, not that the effects of remedies are less marked in causing its disappearance, but it is much more apt to return even in months after an apparent cure has been effected. Whatever plan of treatment, therefore, I find successful in removing the disease in any individual case, I direct to be continued for at least a month or six weeks after the scaly secretion has ceased, and in every case the use of fresh water tepid baths should be directed twice or three times weekly for several months afterwards."

Dub. Quar. Jour., Nov. 1849, p. 345.

179.—CASE OF CANCER OF THE TONGUE.—By Dr. W. KEITH, Surgeon to the Aberdeen Royal Infirmary.

Mrs. M'Hardy, aged sixty-six, from the Cabrach, of a pale complexion, aged expression of countenance, and slightly cachectic look, admitted July 3d, 1849, with a large fungus occupying the posterior two-thirds of the tongue on the right side, ragged and ulcerous, and bleeding on the slightest touch.

The fungus commences behind the base of the tongue, just where the anterior column of the velum-palati touches it. In breadth it all but reaches the mesial line of the tongue, and terminates anteriorly at a point distant half an inch from the centre of the tip.

Is afflicted with constant pain of a burning character in the tumour, aggravated by frequent and severe pains of a lancinating kind, darting through the ear, and extending over the whole right side of the head.

Is almost starved, owing to the presence of the fungus rendering it difficult to swallow fluids, and impossible to get solids over at all.

States that four years since she became aware one night of a warty excrescence on her tongue, her attention having been drawn to it by feeling a taste in her mouth to which she had not previously been accustomed. A succession of these warty elevations, white to look at, arose from time to time around the first one. Until six months since the progress was comparatively slow; the whole then became massed into one fungoid tumour, which enlarged from week to week sensibly.

More recently it has advanced with still greater rapidity, so that the growth of the past three weeks has equalled that of three preceding months.

She has been afflicted with pain from the very commencement of the disease—of a burning and lancinating character—shooting out at the right ear; and her sufferings have all along been much aggravated by any attempt to take food—which, on many occasions, had also the effect of causing considerable hemorrhage.

In the course of the previous treatment she had been subjected to the influence of mercury to the extent of salivation, with no advantage to the disease whatever.

The only topical remedy employed had been lunar caustic, which had been freely and frequently applied to the fungus; the effect was in every instance to aggravate both the disease and her sufferings.

The most careful examination of the neck can detect but a slight thickening of one absorbent gland below the angle of the jaw, and in the course of the external carotid.

Having but one tooth on the right side of her mouth, and that the last molar in the lower jaw, it was at once extracted, to allow of free access to ligature the vessels when the disease came to be excised.

July 20th.—For seventeen days past she has been richly nourished with soups and wine, and was this day brought to the operation chair.

1st. A strong ligature was passed through the tip of the tongue rather to the left side, looped, and given to an assistant, with orders to draw the tongue well out, and towards the left side, at same time instructed to watch closely, and as he saw occasion, to allow her to swallow, should a gulp of blood require her to make the effort.

2nd. Her head was steadied against the breast of another assistant, who had charge of both carotids, with orders to limit the pressure to the vessel on the right side, unless he should receive instructions in the progress of the operation to impede the circulation in both.

3rd. The jaws were widely separated by a wedge of cork entered between the teeth on the left side.

4th. The diseased mass was then firmly grasped between the claws of a vulsellum held in the operator's left hand, the right half of the tongue swept out by one cut of a strong curved probe-pointed scissors, the diseased mass being thereby wholly and at once removed. The dorsal and sublingual branches of the lingual artery bled with great energy for a few seconds, owing to a movement of the patient having altered the position of the right carotid, but both the bleeding vessels were speedly secured and easily ligatured, when all hemorrhage ceased.

5th. To eradicate any trace of disease that might exist by possibility in the tissue contiguous, the actual cautery was then run over the whole surface of the wound; the cavity was then filled with amadou soaked with tincture of matico, and the patient removed to bed. She bore the operation well, and neither moaned nor winced during the whole proceeding. About two hours after the operation hemorrhage took place, which was, however, easily controlled by a finger in the mouth until the operator arrived, who, having emptied the mouth of amadou and a clot of blood, saw, seized, and secured by ligature the dorsal artery previously tied, when the bleeding wholly ceased. The cautery had evidently come in contact with the previous ligature and burnt it.

8 P M.—The wound has been left open, and under constant and easy inspection: not an ooze of blood has occurred since the dorsal artery was again tied.

[The patient went on very well, and was discharged quite cured on the 17th of August. She had a long journey to go, and travelling some distance in an open cart, she was seized with inflammation of the chest, of which she died in a few days. On this case Dr. Keith makes the following]

Remarks.—There seems to be a dread at the performance of this operation on the part of some surgeons, for which there are no just grounds; while others profess to decline the operation on account of the uncertainty of the cure being permanent. To the former I would only suggest, that choking by hemorrhage appears to me to be the only risk; the mere loss of blood need never excite apprehension. The head should be firmly lodged in a perch, such as is used on a dentist's chair, an able assistant can then moderate the bleeding by compressing the carotid of the side on which the operation is proceeding (and the disease is almost invariably confined to one side;) a few seconds suffice for securing the two, or at most three, vessels that are there to be found; and during this short period a right posture of the head, with the remains of the tongue well drawn forward, alike facilitate the ligation of the arteries, and the escape of the blood over the patient's chin and breast. For taking up the vessels the spring or bull-dog forceps is far preferable to the tenaculum—its grasp is decided—its hold is secure and independent of support, so that the operator can dispense with one assistant by dropping the forceps and then running home the ligature for himself. The ooze afterwards is trifling; the wound left open, and the mouth empty, would afford the greatest security against after bleeding, by allowing it to be at once seen—and seen to. The wound is most favourably

circumstanced for healing, and may accordingly be expected to give no further trouble after the first day.

I would never again apply the cautery until after the ligatures had dropped off, when, if anything suspicious appeared in or about the wound, I would assuredly use it most freely as a likely means of destroying any remains of infected tissue that might have escaped excision, and as well calculated, by occasioning the formation of the dense cicatrix so well known after severe burning, to resist the effusion of a blastema bed for cancer cells to become developed in.

To such surgeons as deny to a patient the chance of cure afforded by excision in any case or stage of cancer, I would earnestly commend to your careful perusal the inestimable work on this subject recently *given to* the profession and to science by Professor Bennett, of Edinburgh. After reasoning the question of the "Rational Treatment of Cancerous and Cancroid Growths" in the most able manner—see page 236, *et seq.*, of his work above referred to—Dr. Bennett at page 245, lays down the practical rule—a rule in the propriety of which I entirely acquiesce—"as based alike on pathology and experience"—"That so long as a cancer remains fixed in a part incapable of being removed, and the strength of the patient is not too much reduced, so long is the surgeon warranted to interfere."

The malignant character of the growth excised from Mrs. M'Hardy's tongue may be assumed from the description I annex, penned after a careful microscopic examination made by our eminent histologist, Dr. Redfern.

"The cut surface of the tumour has healthy muscular substance everywhere, except near the middle, at which point it partakes of the structure of the whole mass.

"The mass contains scales of epithelium of all forms and sizes, naked nuclei, numbers of fusiform, caudate, and irregular nucleated cells of all sizes, and a number of beautiful spherical and large cells, with large nuclei, and one or two nucleoli." *Monthly Journal, Nov.* 1849, *p.* 1213.

180.—ON THE TREATMENT OF CHOLERA.

[It would be a useless waste of time to attempt to analyse all that has been written about cholera during the last six months. Like every other journalist, we have felt ourselves sorely puzzled amongst the various and contradictory opinions, which have been pushed into public, as well as into professional notice. We have, therefore, decided to make a collection of what we have considered the best opinions on the various modes of *treatment*, which we here subjoin in lengthened detail, leaving a shorter abstract of those opinions to be concentrated in the Synopsis at the end of the volume,—thus enabling the reader either to take a bird's-eye view in a few moments or to spend an hour on the different papers which we have taken pains to collect from the journals.]

Dr. Stevens' *Saline Treatment.*

[It appears that there is evidence to show that of 1000 cases of cholera treated by Dr. Stevens' method, not more than six per cent. have proved fatal. It has, besides, proved extremely successful in Norway, as stated in a letter from the Regent of that country, and also in Sweden, where it has been by far more useful than any method tried. Dr. Stevens gives the following statement of his method of treatment.]

Premonitory symptoms.—Acting under the belief that the premonitory bowel complaint is an effort of nature to expel the poison from the blood

and the body, on the first appearance of the premonitory symptoms, a seidlitz powder is to be administered; but if the patient experiences a sense of sinking without diarrhœa, more active saline purgatives must be employed. The aperient I have actually used is from one to three drachms of sulphate of magnesia, added to the seidlitz, and the whole taken in a state of effervescence: when this commences to act on the bowels, the patient is to be encouraged to drink freely of thin beef tea, well seasoned with common salt. If vomiting is present, a sinapism is to be applied to the epigastrium: if the thirst is intense, seltzer, soda, or plain water, is to be allowed *ad libitum*.

Second Stage, or that of Developed Cholera.—The diagnostic symptoms being cramps, coldness, or sinking prostration. The following powder,

℞. Sodæ sesquicarb., ʒj.; sodii chlorid, 3j.; potassæ chloratis, gr. vii. Misce.

is to be dissolved in a half tumbler of water, and administered in severe cases every half hour; in some malignant cases, every fifteen minutes; while in those cases which are not very severe, it is to be given every hour. The frequency with which the dose is to be repeated in each particular case varies according to its circumstances. In every instance, the saline must be continued until the circulation is fairly restored; when once that point is gained, the intervals between the doses may be lengthened; when re-action is completely established, it is to be left off by degrees. In extreme cases, the dose of the chloride of sodium is to be increased to two drachms, and in some cases to even more than this. In those cases where the stomach is very irritable, a dilute solution of chloride of sodium is to be thrown up into the intestines; the temperature of this saline enema being as high as the patient can easily bear, which, as a general rule, is about 100 degrees Fahrenheit. When properly used, this is a means of great value.

"When the stomach is very irritable, the use of the saline powder may be occasionally suspended, and common effervescing mixtures, or small doses of the common soda powders, with an excess of the carbonates used until the vomiting abates, and then the carbonate of soda, with larger doses of the chlorate of potash, may be given without the chloride of sodium, or the chlorate of potash, may be given by itself, in doses of ten grains each.

"A large mustard poultice is to be applied in such cases to the epigastric region, the moment the patient comes under treatment. When the saline powders are used at the time the stomach is very irritable, it is deemed advisable to dissolve them in a very small quantity of water.

"When cramps supervene, the extremities must be rubbed with hot flannel. The pain produced by the spasms in the muscles is not only relieved by the frictions, but by this, and the application of sinapisms to various parts of the body, the temperature is increased; an object of no trifling importance in the treatment of cholera. In this stage of the disease, as in the premonitory symptoms, seltzer, or cold water, may be allowed the patients. *ad libitum*. A strong infusion of green tea may also occasionally be used in severe cases with advantage.

"The patients must, invariably, be placed in a room, in which a large fire is kept day and night.

"The ejections, and all other impurities, must be removed immediately from the patient's room. No solid food must be allowed the patients for, at least, five days after their recovery from a state of collapse.

"In extremely malignant cases, or when the patient has not been seen till late in the disease, and especially where neither vomiting nor purging are present, the stage of collapse being well marked, more active measures must be adopted. An ounce of the chloride of sodium, with half a drachm of the chlorate of potash or chloride of potassium, is immediately to be given in cold water, and repeated, if necessary, every half hour until the

patient has taken about three doses of this strong solution. If re-action ensues, it is to be kept up by the common saline powders; and if the strong saline given by the mouth fails, as a last resource, a saline fluid must be injected either into the intestines or into the veins."

To the above, Dr. Stevens has appended the following remarks, to which we earnestly call the attention of our readers:—

"In no case," says he, "left to my care was the smallest quantity of opium or other destructive agent administered, until after the cholera poison was evacuated from the system; above all, not in the early stage: for, from what I have seen, I consider this narcotic poison to be as fatal in cholera as it is in either African typhus, or the seasoning fever of the West Indies; and I would urge on those interested, that if they would test the efficacy of the saline treatment, they must have sufficient confidence to trust to it alone, for to poison with opium, or cajeput oil, or to exhaust his nervous system with galvanic shocks, to depress the vital powers with extreme cold, and then, because at the same time with these deleterious agents, salines have been administered, to declare the patient has fallen a victim to cholera, whilst under the treatment recommended by me, is not only to offer a serious impediment to the spread of a most momentous truth, but to propagate a lie. For results obtained by such a mode of treatment I am not responsible, nor can I allow, without entering my most earnest protest, such cases to be admitted as evidence in determining the value of the non-purgative salines as remedial agents in the treatment of cholera." *Med. Times, Sept.* 1, 1849, p. 124.

[The editor of the Medical Times states,]

We have obtained a verified copy of the records at Coldbath-fields Prison, relative to the cholera of 1832 and 1833; and a strict examination of this document has completely removed, from our minds, every shadow of doubt with respect to the truth of the statement originally made by Dr. Stevens, and more recently by Dr. Turley, namely, *that the saline treatment as recommended by Dr. Stevens is actually the most successful of any that has yet been suggested.* *Med. Times, June* 16, 1849, p. 643.

[The following account of the introduction of Dr. Steven's saline treatment into Greville-street Hospital is interesting:]

The following statement contains the true history of the introduction of the saline treatment into the Free Hospital in Greville-street, in 1832.

About the middle of May, and after the first irruption of the Cholera at the Coldbath-fields Prison had ceased, one of the governors of the Greville-street Hospital, having heard of the successful treatment of cholera that had lately been employed at the prison, by means of which the medical attendants there had saved nineteen out of every twenty cases, desired to see it tried in the above hospital. He took great pains to ascertain the truth of the reports, and, having convinced himself of their accuracy, he consulted some other governors of the hospital; this conference ended in a firm determination that the cholera patients admitted there should receive the advantage of this new treatment. Mr. Marsden was then consulted; he asserted, that the saline treatment was all quackery, and refused to have anything to do with such empirical trash. At this period there resided near to both the prison and Greville-street Hospital, Mr. Whitmore, a medical gentleman, who having been almost a daily visitor at the prison, was so convinced of the efficacy of the new treatment, that he employed it successfully in his private practice. Mr. Marsden having refused to adopt such quackery and trash, Mr. Whitmore was requested to give a fair trial in their Hospital to the new practice Mr. Whitmore consulted Dr. Stevens on the subject, and then agreed to treat the first twelve cases, provided that the medical attendants of the Hospital would give him their free consent. By the interference of the governors this condition was agreed to; and Mr. Whitmore having received a promise from Dr. Stevens that he would assist, he willingly undertook the task. An hour was agreed upon, after which the first

cases admitted were to be subjected to the saline treatment. The experiment commenced on the 20th of May, and such was the interest the governor felt in the result, that he left an order that he should be sent for on the first case coming in, at whatever hour of the night it might happen.

At what hour of the day the first patient was admitted is doubtful: it appears, however, that Mr. Marsden instead of sending for Mr. Whitmore and the governor when the patient was first presented, made his own experiments on the case, and only sent for Mr. Whitmore late in the night, and after his own treatment had failed. The saline treatment, therefore, was not used in this case, until Mr. Marsden considered the patient to be in a hopeless condition.

The case was a very severe one, and Mr. Marsden admitted that it would not recover under any mode of treatment he had seen tried. Mr. Whitmore said that bad as it was, he had seen worse cases recover under the new plan, not only in the prison, but also in his private practice. The saline treatment was then commenced, and in less than three hours the patient had so far rallied, that Mr. Whitmore pronounced him to be almost out of danger. This was, I believe, the first cholera patient who had rallied from a state of such complete collapse in that establishment,—a most welcome circumstance to the kind heart of the governor, who had so much interested himself in trying to counteract the sad fatality of this disease. Even Mr. Marsden admitted he had never seen so miraculous a change from any known treatment of cholera, and that he had now before him a strong fact in favour of the new plan of treating cholera, and facts are

"Chiels which winna ding,
And downa be disputed."

Early on the following morning Mr. Whitmore sent a note to Dr. Stevens to the effect that he had been called by Mr. Marsden, the surgeon to the Institution, and a governor, Mr. Claines, to superintend a case, under the same treatment which had succeeded in the prison.

Immediately after the receipt of this note, Dr. Stevens went to Mr. Whitmore, and they proceeded together to the Hospital, where the patient was doing well; the symptoms of collapse had entirely vanished, without leaving any consecutive fever or bad symptoms of any kind. From this time both Dr. Stevens and Mr. Whitmore attended every fresh case that was admitted into the Hospital. They came in but slowly, but most of them were of the worst description; still, under their treatment, everything progressed favorably. On the 25th instant, three female patients were admitted, all exhibiting the severer symptoms; they were all subjected to the same treatment, and all soon recovered from the state of collapse. Indeed, so energetic was the treatment, and so successful the result, that by ten o'clock on the morning of the 30th, the remaining cases were all believed to be out of danger. Mr. Marsden had visited these and the other cholera patients early that morning, and from what he had already witnessed, no doubt now existed on his mind that the new saline treatment in cholera was a most important discovery. According to the original agreement, the saline treatment was to be put to the test in twelve cases; it had now been tried in ten, of which only one patient perished, a case affording little or no hope when admitted. There was now every reason to believe that the remaining two cases would also recover, leaving a mortality of one death and eleven recoveries. After Dr. Stevens, Mr. Whitmore, and two other medical gentlemen had examined the above cases, Mr. Marsden entered the ward, and addressing himself to Dr. Stevens, made the following observations in a very impressive manner, as if he felt sincerely the truth of every word he uttered. He said, "Dr. Stevens, I candidly confess that before I had seen this new treatment of yours fairly put to the test of experiment, I not only thought but spoke of it with the most thorough contempt; but now, after having seen it tested in so many severe cases, I frankly admit

that even yourself are not more convinced of the worth of the saline treatment in cholera than I now am, and such being the case, if you and Mr. Whitmore will leave the management of the cholera cases to me, I give you my solemn promise, that in future every case of cholera admitted into this Hospital shall be treated in the same manner, and I pledge you my honour, that at the cessation of the present epidemic, the result shall be made known, not only to yourself, but to the public." All this being said in a way that satisfied Dr. Stevens that Mr. Marsden was serious, he exerted his influence with Mr. Whitmore to cede over the treatment of the future cases to him who was truly the legitimate medical attendant at the Hospital.

So long as Dr. Stevens remained in England, no man could act more uprightly than did Mr. Marsden. In a letter, dated October 10, 1832, to the editor of the Medical Gazette, giving the results of the treatment at Greville-street Hospital, he says, "It is right to remark, that the saline treatment in this Hospital was first adopted by Mr. Whitmore, of Cold bath-square, in a patient that was abandoned by myself as a hopeless case—although this person recovered, and by the like plan, many lives were prolonged, yet no uniform success ensued until the saline powders were faithfully administered every fifteen minutes, night and day. with an unlimited quantity of cold water. Hot saline baths were an important auxiliary, in fact they never failed in relieving the cramps and exciting the extreme circulation, and thereby diminishing the lividity of the extremities. In every attack of the disease, that was not followed by purging and vomiting, all remedies were found perfectly useless, as such individuals died generally within six, never exceeding eight hours from the seizure, which, to me, affords ample illustration of the important effects of vomiting and purging in the collapsed stage of complaint, or even in the early stages, when the function of the liver is arrested. It is worthy of remark, that out of 13 patients, from the age of 10 to 20 years, only one was lost, and this died after a long struggle, having been injected nine or ten times with the saline fluid, rallying more or less after each addition to the venous fluid, the pulse being perceptible at the moment of death. In the 315 cases, there was not one who had bilious diarrhœa. From the above facts, it is quite evident, that until the saline medicines, hot saline baths, and water without limitation, was steadily and faithfully administered, almost every case, in the second stage of the disease, terminated fatally; while, on the other hand, nearly every patient who had not been previously treated by other remedies, but with whom the saline only had been pursued, almost every one survived, as the preceeding report sets forth (out of 81 cases in a state of collapse there were only 7 deaths). With the above facts before me, I must be not only blind to justice, but to all sense of honour and candour, were I not publicly to acknowledge, that until this treatment, suggested by Dr. Stevens, was forced upon my notice by stubborn facts, I not only treated it with disdain, but with determined opposition, yet I feel that I have been amply repaid, inasmuch as I have been taught a salutary lesson, never again to treat with indifference the suggestions of any man, without due reflection and careful investigation. Notwithstanding all the conflicting opinions that have appeared respecting Dr. Stevens' hypothesis, whether true or false, I care not; but I do feel, that to him alone is the profession and the public indebted for the path that he has opened, the beacon that he has lighted, in the vast labyrinth of humoral diseases—for the new era that has commenced in both the pathological and therapeutical sciences—and for having thus created the threshold and opened the gates, from whence we view the distant light glimmering over the darkness of past ages, yet sufficiently bright to stimulate every scientific inquirer to a thorough cultivation of this unknown portion of human diseases."

Med. Times, May 26, 1849, p. 504.

Saline Injections.

[Mr. H. Howlett relates the case of a lad aged 15, who was in the state of collapse when visited. Mr. H. says:]

Having on the Sunday previous witnessed the marvellous effects produced by saline injection into the veins, I determined without a moment's hesitation, to employ this remedy; but not having been aware, till I arrived, that it was a case of cholera, some valuable time was lost in procuring assistance and the necessary apparatus. I called upon my friend, Mr. Girdwood, who immediately accompanied me, and on reaching the patient, found the icy coldness of the body more decided, and the collapse more complete, and in my opinion he was decidedly moribund. We immediately opened a vein in the arm, and injected a quart of water at 98° Fahr., in which one drachm of common salt, and half a drachm of sulphate of potash were dissolved. In less than ten minutes our patient showed symptoms of resuscitation: the pulse returned, the brow became warm, the blue and corrugated skin resumed its natural appearance, and as soon as the warmth became more general, and the pulse was fully re-established, we enveloped him in a sheet wrung out in cold water, and covered with several layers of blankets; hot bottles were applied to the pit of the stomach and calves of the legs and feet; a profuse perspiration was the speedy result. Allowing this to continue for upwards of an hour, we removed the sheet, and placed our patient in bed, enveloped in hot blankets. His pulse was then 120, quite firm, his skin warm and moist, his reason completely restored, and on his expressing a wish to sleep, we left him.

On my visit in the morning, I was delighted to find him in every respect better. Some sickness and fever existed, but were speedily arrested by small doses of calomel and opium. Each day since, he has gone on improving, and he is now convalescent.

This case but confirms me in the opinion I have long entertained, that saline injection into the veins, if adopted before the patient reaches too collapsed a state, is the most rational treatment, and one which, I feel assured, if a fair trial were given it, would be crowned with abundant success. It narrows itself, in my opinion, into a very small compass—demand and supply. The blood is generally deprived with intense rapidity of its serum, so as to leave it in such an inspissated state as to be, in a case I saw lately, thicker than treacle. What, then, so rational as to supply it with its fluid properties again, and that immediately? Not by the slow process of absorption, which must of course be the more tardy the greater the collapse, but by introducing it at once into the circulation. I would urge my medical brethren to try the usual modes of treatment, particularly that of Dr. Ayre, in the first stages of the disease; should they fail, however, in arresting its progress, and collapse set in, not to lose a moment in employing venous injection, and the result, I am fully persuaded, will be the rapid diminution of deaths from that most fearful scourge, the cholera.

Lancet, Sept. 8, 1849, p. 269.

[The following case, which terminated fatally after the use of saline injections, occurred in the practice of Dr. Marsden, surgeon to the Royal Free Hospital, London, and is reported by T. C. Jackson, Esq.]

Miss B——, aged fifty-five, of a spare habit of body, was seen by Dr. Marsden on the morning of the 25th of July, having been suffering for nearly a month from diarrhœa. When seen by Dr. Marsden the symptoms of true Asiatic cholera were rapidly becoming developed: she had frequent vomiting, extreme prostration of strength, and several evacuations had been passed, at first copious, but afterwards more sparing, highly characteristic of the disorder, consisting of the peculiar rice-water fluid, perfectly serous, and containing flocculent matter in considerable quantity; there was urgent thirst; the pulse thready, and but barely perceptible. Dr. Marsden prescribed for her some powders, consisting of common salt two drachms; carbonate of soda, one scruple; and chlorate of potash, seven grains: one of

these to be taken every quarter of an hour, and as much cold water as could be taken. The collapse, however, increased, and when seen in the evening, at nine P. M., she lay to all appearance at the point of death. She was breathing heavily, labouring, and with a loud noise; the feet and hands were of a deep-mottled purple colour, and the skin covering them was corrugated, and imparted an icy coldness to the touch; the face was shrunken, the eyes were deeply sunk in the orbits and surrounded by a dark zone, the lids half open, and cornea having a peculiar glazed appearance; the mouth wide open; the lips dark and blue; the breath cold to the hand; the countenance shrunken, and the features so pinched that the whole expression was entirely altered. She had taken in all seven of the powders prescribed, but had vomited all but the last; nothing had been taken for the last *three* hours, as the power of swallowing was wholly gone; she was quite insensible, and could not be roused.

Dr. Marsden now determined to employ the saline injection into the veins, at the same time stating that the case was a very unfavourable one, from the circumstance of the patient having been so much reduced by the long-continued previous diarrhœa. Having dissolved a powder containing common salt, three drachms; carbonate of soda, half a drachm; chlorate of potash fifteen grains; in forty-eight ounces of water; an incision was made over the median vein, which exposed it; it was then isolated from its cellular connexions, by passing a probe beneath it, and an incision made into it, and the canula of the injecting apparatus inserted; no movement or expression of pain on the part of the patient attended this operation. The injection was then begun slowly and carefully, and continued until forty ounces of the fluid had been thrown; about a quarter of an hour was allowed to elapse for the purpose of watching its effects. The pulse at the wrist now gradually became evident, and the skin warm, the corrugation and blue colour rapidly and entirely disappearing. The pulse could be counted 140 in the minute, and shortly it fell to 120, and became firmer and more regular in *its* beats. Dr. Marsden, addressing her in a loud voice, requested to know whether she would like anything? She answered, some tea, which being brought, and some brandy mixed with it, she, with a very little assistance, sat up and partook of, and stated that there was brandy in it, that the tea was very weak, but that it was much better than the salt and water given to her before. She was not conscious of an operation having been performed. Twenty more ounces of fluid were injected, making in all, sixty ounces. At half-past ten P. M. being an hour and a half from the commencement of the injection, the pulse was 130, firm, and regular; respiration 46, and free. The surface of the body, hands, and extremities warm, and the general appearance of the patient presenting a strong contrast to that previous to the operation; there was perfect consciousness and considerable re-animation. She expressed a desire to rest. A draught, containing two ounces of the compound tincture of bark, and thirty drops of the tincture of opium, with some water was then given. This favourable change, however, lasted but three hours. On visiting her at one A. M. she was beginning to sink into an insensible condition; she had not again vomited or purged, neither did the blue colour or corrugation of the skin return; the breathing became hurried, with mucous rhonchus, the pulse gradually failed, and she died at three A. M. on the 26th.

I am indebted to the kindness of Dr. Marsden, in whose practice the above case occurred, for an opportunity of witnessing the operation of injection and its effects. I must confess that, from previous reading and consideration of this subject, there was much doubt in my own mind as to any benefit that could be derived from such a procedure to a patient in so advanced a stage of cholera, more especially in the one now reported. The effect, however, was so very marked, and the patient's apparent restoration so perfect for a limited period, that there seemed to me to be every chance of permanent restoration, had the patient been in a moderate state of previous health, and not so reduced by long-continued disease. It is with a view of

drawing attention to the subject of saline injection that the above case is given, in the hope that it may again be thought worthy of trial and investigation, and some useful result obtained, applicable to the relief of such hopeless cases as the majority of those in the collapsed stage of cholera prove to be.
Lancet, Aug. 11. 1849, p. 144.

Treatment at Guy's Hospital.

[In the neighbourhood of Guy's Hospital (at Bermondsey and Rotherhithe) a choleroid affection, probably identical with the *cholerine* of continental writers, has been very prevalent, and even fatal. The best remedy for this affection has been opium, "given judiciously, but fearlessly." Logwood has also been useful.]

In children, in whom it has prevailed most remarkably, and of which there have been twenty to thirty cases at a time in the children's *clinique*, the following has been most efficacious:—Extract of logwood, two scruples; ipecacuanha wine, one drachm; wine of opium, twenty minims; cinnamon water, four ounces. Of this mixture, one drachm to a child of six months; two drachms to a child of one year; and half an ounce to a child of two years,—repeated after every motion; feeding the child on milk, mixed with a little water; keeping it in bed, and covering the abdomen with a hot linseed-meal poultice. This has been highly successful; and under it comparatively few have been lost.

[The results of the experience of Guy's Hospital in true cholera, are these:]

The following facts appear evident:—

1. Not to give stimulants (alcoholic) recklessly, nor to measure the amount to be given by the intensity of collapse. Those patients have most unquestionably done the best who have taken a *minimum* of brandy.

2. Of all stimulants, patients never respond to any so effectually as to chloroform, in doses of ten minims, frequently repeated. In every case in which it has been given, it has comforted the patient, often brought back the pulse to the wrist, and patients have died with ease who would otherwise have suffered intense agony.

3. When the collapse is at hand, but especially when it has come on, *avoid any quantity of opium*; it does no good, and enough has been often given to poison patients if they outlive the collapse. It kills them in the stage of consecutive fever, increasing the delirium and excitement.

4. Most decided benefit has followed the hydropathic practice; at least, so far as covering the limbs with cloths wrung out of warm water, and covering the patient up with blankets. The cold death-like sweat has often been then exchanged for a warmer excretion from the skin, to the manifest relief of the sufferer.

5. The free use of copious diluents may always be permitted with advantage.

6. *Small* doses of calomel and opium have been chiefly trusted to; but the general feeling is, that the less done, when collapse comes on, the better.

7. In decided collapse, an emetic has sometimes marvellously roused the patient. But the great thing, after all, is to see the patient in the stage of *early cramps*, with collapse, and stop them with opium in the way above described. Cases have been observed in which there has scarcely been purging, and no vomiting after the first appearance of approaching collapse.

As to the essence of the disease, the writer's own notion is, that cholera depends essentially on a poison, subject to laws *quoad* contagion, like that of common fever; that this enters the blood, and instead, like fever tending to the skin, and then producing the peculiar eruption of that disease, it produces a rapid exosmosis of the serous portion of the blood through the capillaries of the mucous membrane of the stomach and intestines. And if the patient does not die from exhaustion from this loss, or from arrest of circulation from draining off of fluids, he eventually sinks poisoned from retained excretions in the blood, just as a person dies in Bright's disease.
Lancet, Aug. 11, 1849, p. 154.

Treatment at St. Bartholomew's Hospital.

[Of the various modes of treatment which have been tried at St. Bartholomew's Hospital,]

That which seems to have been attended with most success is the exhibition of an *emetic* of sulphate of zinc, repeated quickly; if not followed by reaction, a warm bath, mustard cataplasms to the epigastrium, and, an hour after the emetic, an effervescing solution of the citrate of soda, has been given at intervals of two or three hours, ice and iced water being administered to allay the thirst. Stimulants and ammonia have had scarcely any effect in rallying patients. Of all methods of exhibiting remedies, that by enemata has been the most beneficial. Injections of beef-tea, with brandy or without, have been used, now in most of the patients, and with the effect of rallying them considerably.

Aromatics and astringents, gallic acid, tannin, &c., cajeput oil, have all been exhibited, but with no advantage. The most promising plan is the emetic just alluded to. *Lancet, Aug.* 11, 1849, *p.* 155.

Treatment at St. Thomas's Hospital.

[Several cases in the stage of collapse have been satisfactorily treated as follows:]

Let a sheet be wrung out in *boiling* water as quickly as possible, then envelope the patient in it completely, only leaving out the head; cover the sheet over with eight or ten blankets, keep the patient in it for an hour, by which time reaction and profuse perspiration have generally taken place. The patient is then to be put into a clean warm bed; a little weak brandy and water may be given at first, to assist the circulation, after a very short time, whilst in the sheet. Nitro-hydrochloric acid, and syrup of poppies, have been given, either in water or infusion of catechu. If the stomach will bear it, the acid is repeated every hour or oftener, according to circumstances. So many cases of consecutive fever have followed the exhibition of opium, that very great caution about using it is adopted at St. Thomas's. A case of very violent diarrhœa has also yielded, when nothing else would remain on the stomach, to the nitro-hydrochloric acid.

Lancet, Aug. 11, 1849, *p.* 155.

Treatment by Salines and Camphor, &c.

[Dr. James Copland, F.R.S., says,]

Amongst the means which I have employed during the present outbreak of choleric pestilence, I have found, during the stage of collapse, the use of the chlorate of potash, with bicarbonate of soda and hydrochloric ether, in camphor water—or the aqua chlorinii, with the same ether, taken in the same vehicle—to be the most successful; but these should be given in small and frequent doses, or largely diluted with the camphor water, or be taken in the patient's drink. They ought, however, to be strenuously persisted in, notwithstanding the frequency of the vomiting. If reaction follow, then they should be relinquished, and calomel and camphor ought to be given to remove the torpor of the liver, and to promote the portal circulation. If the kidneys are inactive in this stage, embrocations, with turpentine, may be placed over the loins, and the diuretic salts be given internally; or an enema, containing a moderate quantity of spirit of turpentine be administered. If the vomiting continues during the state of reaction, the patient rarely recovers, and never unless urine be secreted.

I must content myself at present with the above hasty remarks, and must only add, that whatever twaddle may appear on the subject of "non-contagion," of "non-infection," of "contingent contagion," of "contingent infection," pestilential cholera will some day be acknowledged to be what I have long ago, and again more recently, endeavoured to show it to be, according to the most irrefragable evidence, a disease *sui generis*, which is propagated by a specific infectious emanation proceeding from the sick, as observed in respect of true typhus and scarlet fevers, whenever and wherever the predisposing and concurring causes are in operation, as fully

shown in the articles "*Disease*," "*Infection*," and "*Pestilences*," in my work on Practical Medicine. *Med. Gaz., Sept.* 22, 1849, p. 543.

Calomel Treatment.

[The following observations are by Dr. Joseph Ayre, of Hull. At the time they were written, little more than twenty-three days after the appearance of the cholera in Hull, there had been eighty-one cases of the disease, more or less advanced into the collapsed stage; and of this number only ten had died. Dr. Ayre's remarks are as follows:]

1st. as to the intensity of the disorder, it might suffice to take, in their order, the first four cases we were officially called to attend, which, in company with Mr. Archbald and my other colleagues, I especially attended, and by which I aimed at, and succeeded in, the fixing their attention to the mode I followed in the treatment. I gained, by the results of these cases, the entire confidence of my colleagues in its power. The first case was in a girl, (Marshall,) nineteen years of age, who resided in St. George's-place, Little Passage-street, and had nursed a sister in the same court, who had died under the opiate and stimulant treatment. This patient (the girl) became pulseless, and the discharges were so copious as to pass through the bed, and flow in a stream along the floor. The secretion of the kidneys was stopped for seventy-four hours, being longer by two hours than had happened to any patient I saw in 1832. This patient took a large quantity of calomel, in two-grain doses, was convalescent, that is to say, was safe from the disease, and free from consecutive fever, and was quite well in eight days. The next patient was also a girl in the same court, (Brewer.) She was thrust out from her lodging in an adjoining house, and, in the absence of its owner, crawled into the house, and got into the bed of a woman who had died of the complaint two days before. She was nearly pulseless, but, like the first patient, was carefully attended by a hired nurse, and was convalescent in two days. The urine was suppressed forty-eight hours. The third case was a youth, (Collins,) aged eighteen, of Duke-street. He had lost his mother a few days before, under the stimulant and opiate treatment, and his sister was dying at the time of our visit, under the same treatment. They had all occupied the same room. The discharges of the patient ran from him, through the bed, and the secretion of the kidneys was suspended sixty-three hours. He took a large quantity of calomel; had very slight ptyalism; was convalescent in three days; and was walking about, in seeming good health, at the end of the week of his attack. This patient was seen in company with Dr. Sutherland. The fourth patient was a married sister of the foregoing, (Smith.) She had been several days acting as a nurse to her family, when she was struck down with the disease. She was, however, seen early, and was convalescent in two days, with a slight degree of ptyalism.

But to attain a just knowledge of the intensity of the disease, the interests of truth demand of me to say, that without any means of knowing the number that have been attacked, the mortality from the disease in this town has been very great under the opiate and stimulant treatment, which has been too generally pursued, and, as I will presume, from an ignorance of any better method. As the official attendants of the poor, and having been widely advertised as such, my colleagues and myself have necessarily had the greater number of the patients attacked; and when I notice among our recoveries a woman eight months *enciente*, a half-famished Irish labourer fetched in by the police from the outside of the town in a cold and livid state, a child two years and a half old several hours pulseless,—it may be readily imagined that we have had our full share of intensely affected patients.

But, as I have stated, if the treatment be available for the cure of twenty severe cases, it should, *cæteris paribus*, be available for the cure of thirty, and so on; and I have, in a former report of my treatment and its results, deemed it right, not only to explain how I saved some, but why I did not save all; for in the absence of any disease previously present, and of the

causes now to be noticed, every patient, or well-nigh every patient, might be saved. The causes which have appeared to prevent our entire success in curing all our patients are mainly two—one of these is a most blameable delay on the part of the friends in sending for medical aid. From causes pertaining either to the constitution of the patient, or to the concentrated intensity of the *malaria*, the disease differs greatly in different individuals in the rapidity of its course, varying in the period of its fatal termination from four or five hours to twelve or twenty-four. In too many cases especially when the disorder commences in the night, assistance is not sought for by the friends until four or five hours have elapsed, when the patient is already literally moribund, and when the stomach has become insensible to the influence of every medicinal agent, and the lungs and brain have become irrecoverably congested, as shown by symptoms the most intelligible to those familiar with the disease. But what, if possible, is worse even than delay, and more palpably a hindrance to success in the treatment by calomel, is when the opiate and stimulant treatment has been already tried upon the patient, and which failing to restore the secretions, increases the congestion, and puts in abeyance those vital sensibilities and sympathies which are needed to render the calomel treatment efficient. Of the ten patients who died, three of whom were children, one was in the disease in its severest forms more than six, and the other about five hours; they were pulseless when visited, and had probably been so for some time. Five had been under treatment by others, and had been drugged with opiates and brandy, and with camphor and cayenne pepper; the ninth was subject to fits of insanity, and when he had considerably recovered from his disease, and had been several days out of collapse, he became suddenly ill, (and if his daughter was to be credited, it was from his having swallowed some hard substances); and the tenth was a drunkard and of a drunken family, and became affected with congestion of the brain, when he had become fully convalescent and had taken some rum. These then, are the patients whom we lost, and the circumstances I have enumerated are the causes which occasioned their loss. It may indeed be the case that the disease is of such intensity as to destroy the vital powers at its first assault; but neither in 1832, nor in the present epidemic, which is to the full as severe in its symptoms as it was then, have I ever met with a case in which, with all the diagnostic symptoms of collapse clearly exhibited, and with a reasonable time afforded to begin it, the treatment I have adopted did not avail to subdue it; and it is with the emphasis and solemnity of truth that I now make this statement, appealing, as I confidently can do, to the experience of my three colleagues in the treatment during the whole time in which we have worked together.

With respect to the treatment pursued by us with calomel, I may here repeat, (what I have stated at some length in my work on the disease, and in an abridged form in the pages of the Lancet), *that when a patient is entering the stage of collapse, as shown by the blue-colour, vomiting and purging, and weight at the præcordia and cramps, we begin our treatment by giving a mixed pill, containing two grains of calomel, every ten minutes, with one, or at most two, drops of laudanum in a tea or table spoonful of water; we continue the calomel at the same intervals for five, six, or more hours, watching the course of the symptoms, and taking care to reduce the dose and widen the intervals of exhibiting the calomel as the coldness and lividness subside; and when the surface has become of a natural temperature, and the pulse natural, it may be wholly discontinued.* There is no limit required to be set to the time during which it may be given, of the quantity that may be taken. Pending the duration of the stage of collapse there is no absorption of the calomel into the system, and no benefit to be obtained by aiming at such an effect, and although no evil nor even an inconvenience has been sustained by a slight tenderness of the gums, which is sometimes produced, yet it is not to be desired as a remedial means in this disease. A patient, (Higgins, of Mill-street), who was seized on the Sunday, and was walking in the street on

the following Saturday quite well, took three hundred and fifty grains of calomel before the collapse was fully removed, and during seventy-seven hours of interrupted urinary secretion, as I have just learnt from Mr. Gibson; and with the exception of a slight tenderness of the gums, and without any flow of saliva, she became and still remains in every respect quite well—I have seen her this morning. And this leads me to remark, regarding the results of this mode of treatment, that the operation of the calomel being to restore the secretion of the liver, and thereby remove the congestion of it and its associated organs, there is no consecutive fever following the collapse, and not one of our recovered patients had any degree of fever, but came at once into a state of comparative health in coming out of their collapse; and although we have had seventy-eight patients in this disease in the space of three weeks, we have never had more than five or six patients under treatment, the rest having recovered, and if women, have followed their various avocations, one patient being in two or three days sufficiently recovered to be able to act as nurse to another of the family struck down by the disease. The occurrence of ptyalism was so rare and so trifling as to make it of no account, although the average quantity of calomel could not be much less than fifty or sixty grains. In giving laudanum my object has *only been to detain the calomel for a time in the stomach*, and not with any view to act as a stimulus to rouse and support the vital powers, or as a sedative to remove the cramps; for I have always held and acted upon the opinion, that the abeyance of the vital powers, as shown in the shrunken features, cold and livid surface, and also the cramps, and, indeed, every one of the appalling symptoms of the complaint, are dependent upon a venous congestion of the liver, produced by its interrupted secretion, and that it is by means that will restore that secretion that the whole of its symptoms is to be removed.

I care not, therefore, how little laudanum is exhibited, or for how short a time it is continued, and would advise that it should be taken only at wide intervals after forty or fifty drops have been given. I still give it because I originally began with it, and because my patients have recovered under its use, but *I am strongly disposed to give the calomel alone*, and have already tried it on an infant with success although the patient was pulseless when the treatment began.

With respect to any other auxiliary means, my practice is, as it ever was, *not to employ any*. To our patients not one drop of brandy or other fermented liquor has been given, nor have we ever done more than sometimes to order a hot bottle to be put to the feet, or a small mustard plaster to the stomach, though, I believe, in nine cases out of ten these means have been left unordered. One difficulty we have had to overcome is *the negligence of the hireling nurses*, and we have often held them to their duty by the promise of a reward if the patient recovered.

And now, having stated as much as it occurs to me can be needed to make the results of our treatment and the nature and object of it intelligible, I shall conclude by re-stating what I would desire to be especially insisted on—namely.

1st. That there is no period in the stage of collapse short of a visibly moribund state that should make us despair of restoring the patient, or induce us to desist from using the treatment.

2d. Whatever may be the quantity of calomel employed during the period of collapse, no evil of any kind results from its use; and when the patient is restored, the only inconvenience that ever happens is a slight tenderness of the gums, which may generally be prevented by desisting at the proper time from exhibiting the medicine.

3rd. That opiates in excess, and all stimulants, are to be avoided as especially injurious, and tend to produce in the recovered collapsed patient a state of fever, which may itself become a cause of death, but which never takes place under the calomel treatment, as the patient, in coming

out of the collapse, returns to a state of comparative health, and is generally able to walk out of doors in three or four days, and take his food as usual.

4th. That besides the injurious effects justly ascribable to opiates in any considerable quantity, and to all stimulants, whether alcoholic or pharmaceutic, there is a general objection to be offered to all agents, auxiliary or otherwise, when employed to obviate this or that symptom, whether it be the cramps or the coldness, for these are but symptoms of an internal morbid condition, and whatever tends to remove that, removes also all the symptoms dependent on that stage, and my early experience in the efficacy of calomel given in small and frequently repeated doses to remove the morbid cause, has taught me to depend upon that single remedy, unmixed with any other means. As neither in the epidemic of 1832, nor in the present one, have I ever had recourse to any other, so have I never had occasion to regret my exclusive employment of it; and if in the cure of this appalling malady whose symptoms and course are so unerringly uniform, the calomel in small and constantly repeated doses is not a specific, then is there no remedy that ever merited that name. *Lancet, Aug., 11, 1849. p. 145.*

[Mr. W. N. Spong, of Feversham, when called to a man in the collapsed stage of cholera, adopted the following treatment]

To take two grains of calomel and two drops of tincture of opium every ten minutes. This is Dr. Ayre's plan of treatment. In addition, to have a hot-air bath, and take ten drops of chloroform with every alternate dose of the medicine; also, a drachm of strong mercurial ointment to be placed in each axilla; this was rubbed in by the patient himself, in consequence of his frequent spasmodic movements. Twenty-seven drops of chloroform are equal to five minims.

21st.—One A.M.: After six hours' treatment there is decided amendment; the attacks of cramp and vomiting are less severe, and the intervals prolonged. Extreme thirst, but if more than half an ounce of fluid is taken at one time it is instantly rejected; commencing re-action. Omit the opiate and chloroform. One P.M.; Improving; reaction full established; the purging has ceased; cramps and vomiting only occasionally recur. To take the calomel every half hour.

22nd.—At six this morning a well-marked crisis took place. The urinary secretion was restored after thirty-eight hours' suppression, the liver performed its function, and a black coloured motion was passed, followed by several characteristic chopped spinach stools. From this hour he gradually progressed. To take small doses of solution of acetate of ammonia with the alkali slightly in excess, and no other medicine.

27th.—Convalescent.

Remarks.—If you desire a particular remedy to be given, tell the nurse to give it; but if you want it to be given properly, give it yourself. The latter part of this precept was acted upon for the first eight hours, and the medicine punctually given. The readiest plan is, to throw a couple of drachms of calomel on a sheet of paper, and divide and subdivide into sixty parts; one of these for a dose is best taken from the point of a table knife. Again, with regard to the opiate, bale out any number of spoonfuls of water, add twice the number of drops of laudanum, using this spoon to administer the same; thus accurate quantities are known to be given. A hot-air bath is easily and efficiently given as follows:—Fasten a blanket loosely around the body with large pins, to prevent the patient from kicking it off during the attacks of cramps: place two chairs upon the bed, so that the backs form an arch over the person, tie them side by side, and over these throw several other blankets. A spirit-lamp can now be safely held beneath at the foot for a few minutes, which will suffice to rise the temperature to one hundred and thirty degrees or more.

In this disease minutes are as valuable as hours; if a spirit-lamp is not at hand, an excellent one can be made out of a tea-pot; pour in four or five

ounces of spirits of wine, and make a wick by unravelling a piece of calico; collect the threads into a twisted form, pass these down the spout, and the lamp is perfect. The hot-air bath appeared to relieve internal congestion, and the chloroform was given with the intention of mitigating the agonizing cramps. But supposing the question to be fairly put, "What was the remedy in this case?"—my answer would be, most decidedly the calomel, given in this particular manner. The patient took two drachms and a half of this, about one drachm of chloroform, and only forty minims of tincture of opium; the gums were but slightly touched. No brandy was at any time given, and to this is in great part attributed the entire absence of consecutive fever. During the collapse a circumstance occurred that deeply affected this man; but I observed, that although he cried, or, more strictly speaking, made a noise, yet he could not shed tears; this secretion in common with all others, wanting its healthy stimulus. At the present moment it behoves every practitioner to be fully prepared in his own mind as to the method of treatment he intends to pursue, when called upon to combat this terrific enemy. If the constitution is not utterly depraved, Dr. Ayre has ably shown that calomel may be depended upon, and with this for a sheet-anchor, the frail vessel will often outride the storm.

Lancet, Aug. 4, 1849, p. 124.

[Dr. J. C. Badeley, of Chelmsford, relates a case in which, when the patient was in a state of complete collapse, the administration of a scruple of calomel every hour, for three times, was followed by complete and rapid recovery.] *Lancet*, Sept. 8, 1849, p. 269.

[An anonymous correspondent of the Lancet, speaking of the calomel treatment, says:]

In the annexed summary of Dr. Cox's cases, it will be seen that the quantity of calomel administered, and the number of hours elapsing before its effects were visible, are large, in direct proportion to the smallness of the doses given. The three most speedy recoveries were those in which five and three grains were taken every ten minutes; in one case every fifteen minutes; and in these the aggregate is infinitely less than where one-grain or two-grain doses were preferred. Of the two deaths which occurred three or four days after reaction, one patient had taken 480 grains; the other 384 grains in two-grain doses. In Mr. Perry's case, where twenty-four grains were given in the time that would only have afforded eight grains, according to the two-grain system, the results appear much more marked and satisfactory; and I can assure your readers that the certainty and rapidity of the effect is incomparably greater where the full dose—twenty or even thirty grains—is given at once. In speaking of this patient, he remarks, as others have done who have given large doses of calomel, that "he felt very well, but exceedingly weak, after a bilious motion was produced. I think there can be no hesitation in deciding by which method this effect will be most speedily obtained. To those who have a doubt, I beg to offer my experience, as most positively in favour of the larger quantity, which seldom requires to be repeated, and never more than once, or, at the most, twice; whilst it is shown that, in what appears to be the mildest treatment, the quantity varies from two drachms to an ounce.

As these gentlemen have not the fear of giving calomel to an unusual extent, they cannot object (as many others do, who have not tried it) to administer the quantity I recommend, on account of its magnitude; and, it must be evident, that one such dose is better calculated to attain the object aimed at—viz. "to act forcibly and speedily upon the stomach, liver, and kidneys, with as little risk as possible of impregnating the system with mercury." Upon the stomach, as I have mentioned in my last letter, a direct sedative effect is obtained, whilst the secretion of the liver and kidneys is rapidly induced. There is this further advantage in the large doses—the medical man can be assured of its being taken. By always having some

with him, he can place it on the patient's tongue; and if no vomiting occur within ten minutes, he may rest pretty certain of the effects.

If vomiting should take place within that time, he may give another dose, and leave his patient without anxiety. as even should there be further irritability of the stomach, enough will be retained from the two administrations to check it very speedily, and to produce the other results indicated. He has only to give directions for the auxiliary treatment, such as warmth, friction, effervescing drinks, and gentle stimulants; and remain confident that the calomel is effectually doing its duty, whilst he is attending to other cases.

I feel called upon to protest against the administration of calomel in small doses often repeated, from the assurance that it will lead to disappointment, and probably induce the profession to abandon its use, as was the case before; and however satisfactory it must be to find that it has been so useful, I believe, as I have endeavoured to point out, that these very cases indicate the propriety and superiority of one or two effective doses in the first instance, which seem to have the following advantages: first, more speedy and certain action; secondly, the smaller amount necessary to be given, and consequently the less risk of injuriously affecting the constitution; thirdly, the great advantage of knowing that your remedy is taken, and has a fair chance of doing its duty.

Summary of the cases reported by Mr. Cox.

Recoveries.		Reaction in.	Consumed.
3 most speedy, taking	5 grs. every 10 min.	2 hrs.	60 grs.
	3 grs. every 10 min.	3 hrs.	54 grs.
	3 grs. every 15 min.	3 hrs.	36 grs.
5 taking	2 grs. every 10 min.	10 hrs.	120 grs.
	Ditto ditto	16 hrs.	192 grs.
	Ditto ditto	12 hrs.	144 grs.
	Ditto ditto	6 hrs.	72 grs.
	Ditto ditto	9 hrs.	108 grs.
2 taking	1 gr. every 5 min each	14 hrs.	168 grs.

8 time previous to rallying not stated.—Total, 18.

Deaths.	died in.	Having taken.
1	16 hrs.	384 grs.
1	10 hrs.	240 grs.
1 died on the 4th day, after rallying in 16 hrs.		384 grs.
1 died on the 3rd day, after rallying in 20 hrs.		480 grs.

2 time previous to death not stated.—Total, 6.

Lancet, Sep. 1, 1849, *p.* 236.

[Dr. Hughes of Guy's Hospital, does not agree to the efficacy of the calomel treatment. Speaking of the cases which he has seen treated by the administration of small doses of calomel frequently repeated, he says,]

I believe that all, or at any rate almost all, the patients so treated have died. So common, indeed, has been this result, that latterly, when on entering the sick room, I have seen some dozens of powders upon the dressing table, and have found the patient's tongue coated with white, as from so much chalk or carbonate of lead, I have at length assumed that his fate was almost certainly sealed. I regret to express my belief that I have been very rarely mistaken. Such, sir, is the result of my own observation of the treatmenr of cholera by calomel.

[Dr. Hughes states this to be the opinion also of many other medical men with whom he has conversed. Dr. H. thinks that the most important point in the treatment is to stop the drain from the alimentary canal. He says,]

For the purpose of stopping this drain, I have myself found nothing so effectual as a large dose of solid opium by the mouth; followed by astringents, ammonia, and opium in a fluid form; together with an enema composed of a small qaantity of warm starch, and a full dose of laudanum. If

these means are employed early in cholera (and by cholera I mean neither diarrhœa, however profuse on the one hand, or the collapse of cholera on the other). I believe that they will frequently be effectual in checking the disease. They have certainly been the most efficient remedies that I have myself employed, or seen employed. When collapse occurs, they must of course be laid aside. Then, indeed, calomel may be given, for then it can do no hurt, though I verily believe it can effect no good; then, so far as I have observed, the free administration of cold fluids, together with a moderate amount of stimulants in the form of ether, ammonia, chloric ether, or turpentine, sponging the surface of the body, and wrapping it in warm blankets, are almost the only, or at any rate the best means to be adopted for the possible restoration of the patient. *Med. Gaz. Sept.* 21, 1849, *p.* 485.

[At a meeting of the London Medical Society, Dr. GOLDING BIRD said,] With respect to the calomel treatment—that by small and often repeated doses—he had seen much of it, both at home and abroad; he had tried it himself, carefully, assiduously, and constantly; and he had come to the conclusion that it was of no benefit whatever. He could only reiterate the opinion of his colleague, Dr. Hughes, on this point.

Medical Gazette, Nov. 2, 1849, *p.* 769.

Treatment recommended by T. M. GREENHOW, Esq., *Newcastle-on-Tyne.*

If by the term poison is intended to be expressed matter, whether solid, liquid, or æriał, which being received into the human system, produces morbid actions, threatening death, or suspends vital actions essential to life, then must the physical cause of cholera be properly a poison; and the history of nearly every case of the disease proves that the first impression of this poison is made on the mucous membrane of the intestines, and the first effect is the entire suspension of its functions of absorption and secretion, while an increased or spasmodic action is induced in the muscular coat of the same viscera. Hence the copious and exhausting drainage through the former, and rapid expulsion by the latter coat of the intestinal tube of the thinner portions of the circulating mass of blood; and this is soon assisted by the extension of the muscular spasm to the walls of the abdomen, at the same time that similar diseased actions are extended to the respective coats of the stomach, giving rise to like discharges of serous fluid from both extremities of the digestive canal. So rapid is this drain, that not unfrequently, by rendering the blood viscid in quality, and greatly diminished in quantity, it very soon leads to the entire suspension of secretion, a direct abstraction of the material whence the secreted fluids are to be supplied is effected; and hence the absence of bile in the excretions, and the suppression of urine, by which cholera is characterized; hence, too, the almost entire suspension of the heart's action and of the arterial and venous circulation, and as a necessary consequence, the cessation of the oxygenation of the blood, and the formation of animal heat. Though the lungs continue to perform the mechanical function of respiration, the office of vital chemistry ceases, and hence the cold tongue and cold breath, and the external appearances which so remarkably distinguishes the most intense forms of the disease.

The morbid effects of the poison on the coats of the intestines, constitute the first and most cureable stage of cholera. The second stage is marked by some, or all, of the subsequent train of symptoms. The third stage is one of partial recovery, marked by symptoms of congestion or inflammation of the brain or other organs, the results of the efforts of nature to restore organic function; not unfrequently, and unfavorably influenced, it is to be feared, by excessive doses of opium, or stimulents given as restoratives during the former stages of the attack.

This hasty sketch of the paroxysm of cholera naturally suggests clear and simple indications for our guidance in its treatment. In the first stage, to check the serous discharges, relieve spasm, and restore secretion, must be our great objects; and mercury and opium are the remedies to be relied

upon. But in what doses must they be given? This, indeed, is the great problem to be determined; and as far as our experience goes, we will attempt its solution. Very large doses of either medicine are not needed, and will certainly do harm; in the one case, by increasing, instead of relieving local muscular spasm; in the other, by confirming the arrest of secretion, and by its subsequent effects, especially on the brain. Without affirming that we are enabled to define precisely the best form and doses, we can at least specify the formula which we have found generally successful in answering the intended indications. To render the narrative of treatment simple and uncomplicated, the prescription is subjoined:—Mercury pill, half a drachm; ginger powder, twelve grains; opium powder, six grains. Mix, and divide into twelve pills: two to be taken immediately, and *one* every hour while the purging and vomiting continue. Should the first dose of pills be rejected, they had better be soon repeated. After one, two, or more doses of the pills, it generally happens that the diarrhœa of the first stage ceases, or is much mitigated; and their continuance, at longer or shorter intervals, soon removes it entirely.

The diet requires somewhat strict regulation. When the diarrhœa is severe, attended, probably, with griping, solid animal food, fruit, and vegetables, must be entirely abandoned, and salted gruel, or especially chicken-broth, with toasted bread, will agree best. Cold water, iced, is generally much relished, and may be taken pretty freely. When the attack is slight, solid but simple animal food may be allowed; and if the patient is accustomed to stimulants, brandy, in great moderation, in water, at dinner. In a day or two it is probable that a gentle purgative will be needed; in which case castor oil, rhubarb and magnesia, or aloes, either in pills or the compound decoction, will be found most suitable for promoting solid evacuations. But it frequently happens that the pills alone suffice to restore a perfectly healthy action of the bowels. During convalescence it is sometimes useful to give infusion of calumba, with a few grains of carbonate of soda and a little aromatic tincture twice a day. The return to ordinary habits of diet ought to be gradual, and caution should be observed for some time in general regimen.

The symptoms of the second stage of cholera are of so marked and grave a character as to demand the closest attention. The prostration of muscular strength is often so considerable as to require the greatest quietude. Warmth and comfort must be promoted, but busy and constant efforts to restore animal heat will certainly do harm, by increasing fatigue, and cannot be successful. This effect can only result from restored function and cannot be produced by external applications, though, when judiciously employed, they may place the person in a situation favourable for the action of other remedies. He ought therefore to be placed in a warm bed, and sinapisms to the feet and pit of the stomach may do good. Internal stimulants, whether aromatic oils, or alcohol in any form, or ether, are, for reasons stated above, injurious. As medicines adapted to the indications of treatment, the pills of the preceding formula will suffice; two to be given immediately, and one every hour while the serous discharges continue. Should the diarrhœa cease, and the vomiting continue, a few grains of carbonate of magnesia, in mint water, or in a state of effervesence, given occasionally, will often check it successfully. Ordered, carbonate of magnesia, one drachm; mint water, eight ounces; compound tincture of cardamoms, three drachms. Mix. Three table-spoonfuls to be taken every hour or two, according to the urgency of the vomiting. The use of the pills to be continued. Or carbonate of magnesia, one drachm; carbonate of soda three drachms; lump sugar, two drachms; water, eight ounces. Mix. Two table-spoonfuls to be taken with one of lemon-juice.

Liquid diet—chicken broth, warm or cold, or gruel, with salt—should be given in unlimited quantities, without regard to the frequency with which it may be rejected by the stomach. It will supply the place of the exuded

serum, so as, in the first place to prevent further waste, and subsequently refill the emptied blood-vessels. The face may be occasionally sponged with water, tepid or cold, as may be found most grateful; and when reaction has fairly commenced, the entire surface of the body should be washed with warm vinegar and water. Such ablution acts favorably on the skin, both as a grateful stimulus, and by removing the perspirable matter which has often been profuse in quantity, and in quality resembling the other serous discharges.

The patient's room must be kept, throughout the treatment, perfectly airy and well ventilated; and the greatest care must be taken, during the stage of collapse, not to harass or fatigue him by too constant interference. In an hour or two it is probable, even in very bad cases, that some improvement will be observed. The evacuations will be lessened or cease altogether, or the diarrhœa or vomiting only will be arrested—often the former while the latter continues, though mitigated in degree; sometimes the contrary is the case. The cramps will be partially or entirely relieved; the pulse will become more distinct and increased in volume; the tongue and breath less cold; the features and extremities less shrunk, and possibly some refreshing sleep may take place. This condition of things is favourable, but must not be too certainly relied upon. The pills may be taken at longer intervals, the same system of diet persevered in and muscular exertion with equal care avoided.

The discharge of urine is a very favourable sign. It proves the replacement, in some degree, of the *pabulum* of secretion, and the restoration of secretive power. Sometimes it is several hours before the symptoms give way, or anything like reaction is established. Should no improvement occur, but, on the contrary, the state of the patient become more alarming, the injection into the bowels of one, two, or three pints of the gruel with salt, or chicken broth, will sometimes be found extremely useful. The effect of such injection may be either to supply the place of the serous exudation; by absorption, if reaction is beginning, to replenish the empty vessels; or to soothe and relieve the spasmodic action of the muscular coat of the intestines. But whether by any, or all, of these modes of action, it is certain that sometimes the most salutary effects ensue, leading quickly to the restoration of suspended functions.

When, by these measures, the most formidable symptoms have been subdued; when the vomiting and purging of serous fluid have ceasd; when urine begins to be discharged, and the pulse returns, or assumes more volume and vigour; the tongue and breath have become warmer, and the cramps or muscular spasms have either ceased or are greatly mitigated; any description of animal broths with toasted bread, should be given in abundance, varied, perhaps, by the farinacea in common use. Serous discharges from the bowels may still take place, at longer intervals and in smaller quantities, in which case a pill may be taken every three or four hours. This is the time when the power of the mercurial, either already taken or now given, will be successfully exerted in the excitement of the liver, and we shall look with anxiety for the appearance of bile in the stools; such appearance is generally soon followed by the proper feculent character of these evacuations, accompanied with their characteristic odour; and the best assurance is thus given of convalescence, unless, indeed, the patient should be affected with some of those formidable symptoms which occasionally occur, and constitute the third stage of the disease. The nature of these symptoms have already been referred to. They may have their seat in the head, which frequently happens, especially when opium and stimulants has been given liberally, or in the liver, or other internal organs. Sometimes continued fever ensues, either immediately or in a few days; but whatever may be the nature of the disease which follows cholera, rather as an effect than as a proper or necessary portion of its attack, it must be treated on the general principles of therapeutical science, which need not

constant vomiting and purging; violent cramps; great prostration; the evacuations and countenance truly choleraic. This was on Monday morning.

Treatment.—One of the pills every hour, until three had been taken. The symptoms persisted during the day, although the vital prostration was arrested; in the evening, this was followed by general improvement; the draining from the bowels ceased; the cramps abated; the vomiting subsided; at midnight, although in the blue stage, she was not pulseless; was free from pain, and expressed herself better. Has continued to progress, and is now out of danger.

A day or two after these notes were penned, this poor woman suffered abortion, and sank under the effects.

Case 6. G. J.——, aged 30, a sailor, robust and healthy: was seized yesterday afternoon, just after having eaten a few oysters. Such was the suddenness and violence of the attack, that he was reported to have sunk on the floor as if he had been stunned by an electric shock. At the onset, the cramps were so horrible that they "quite stopped his breath." On his being brought into our surgery, these were renewed with such fearful violence, that the sufferer could neither be kept on his seat, nor prevented from tearing off his clothes; extreme, indeed, must have been his agony. The chief brunt of the spasm appeared to occupy the femoral, abdominal, and thoracic muscles. There had been neither vomiting nor purging.

Treatment.—A draught of strong nitric acid and opium mixture immediately; no amelioration followed. After waiting ten minutes, I gave him one of the pills; the effect was immediate; so rapid was the relief experienced, that in less than a quarter of an hour the poor man walked to his lodgings, a distance of 200 yards. During the remainder of the day, he took a little weak acid and opium mixture, and on this (the following) morning, he called upon me quite recovered.

In addition to these briefly sketched cases taken from my former experience, I shall now add, *more in extenso*, one of recent date, being the only instance in which I have found it necessary to have recourse to the pills during the present epidemic.

Case 7. Mr. H———, aged 68, residing in Ebury-street, Pimlico; of nervous temperament, debilitated constitution, and spare habit, with slight hemiplegia from an apoplectic seizure sustained twelve months ago. On Monday, August 6, about 6 a.m., he was seized with diarrhœa. When I saw him at 9 a.m., he had had a great number of copious evacuations, which, from being at first of bilious character, had now become watery, light and flaky —almost, in fact, truly choleraic. The pulse was feeble, slight vomiting, some griping pains, and a good deal of cramp in the legs and feet. I prescribed him the nitric acid mixture of the strength of, acid. three minims; tincture of opium, three minims and a half, to each dose. Under the use of this medicine improvement soon set in. At first the draughts were exhibited every hour; but as recovery advanced, the intervals were extended to two, three, and four hours. On Wednesday evening he would, and did, walk out to some distance, which fatigued him considerably. Next morning, about half-past three, he was suddenly seized with diarrhœa. I saw him in about an hour, and found he had had five or six profuse evacuations, and was much exhausted. He had neglected taking his medicine on the previous day, but had taken, since his attack, two small doses that had been left—apparently, without any effect. I now thought I would try the effect of a cretaceous opium draught, to be repeated in an hour. Shortly after he had taken the second draught, I received a message that the patient was dying. On reaching him, at eight o'clock, I found that the purging had been unceasing. The dejections were of the true rice-water or serous character, of which there was now a continuous draining from the bowels; no pain; pulse exceedingly feeble; voice lost, features pinched; diminished temperature; vomiting, thirst, and excessive prostration. I instantly

gave him one of the phosphoric pills, and allowed half a wine-glass of cold water as often as desired. Improvement was soon evident. No further vomiting occurred. In a few minutes the draining from the intestines began to diminish; the pulse improved; he felt "better." The progress of amelioration continuing, at nine o'clock I gave him a dose of the acid mixture, and left him comparatively comfortable.

At ten o'clock I found little further advance had been made, and there had been an occasional oozing from the bowels. Gave him another pill. During the following hour, the improvement was remarkable, and highly gratifying. At eleven o'clock, Dr. Murphy saw the case with me, by desire of some of the patient's friends. At this time all the formidable symptoms had subsided; the countenance, voice, and pulse had much improved; purging quite stopped, and even the thirst had nearly left him, and the only sipped a little rice-water occasionally. A dose of the acid mixture was given, to be repeated every two hours. At two o'clock I found him so much improved that I merely ordered the medicine to be continued. Evening: still better, and took nourishment.—Friday morning: doing well. At three p.m. this day, Dr. Murphy and myself visited him again: all trace of the disease had left him. To have some beef-tea; continue the medicine every four hours. From this time it is unnecessary to give further details. When I called on Wednesday, I found the old gentleman apparently well, save a little debility, and in his accustomed health, and he has been quite well since. *Lancet, September* 22, 1849, *p.* 313.

[Dr. C. J. B. Aldis, Lecturer on Medicine at the Hunterian School, confirms the value of the treatment by phosphorus. He says, speaking of this drug.]

The remedy I allude to is phosphorus, which was administered in the dose of one grain, combined with wax, in the form of pill, by Mr. Batten, surgeon, residing in Westbourne-street, Pimlico, with whom I visited the patients. The two persons who recovered resided in Queen-street, Pimlico; one having taken three pills during six hours, while the other took only one pill. The other patient, who lived in Westbourne-street, took two pills; she rallied for a short time, but eventually died, having been in a hopeless state when first seen. Medical men are aware that it is a powerful medicine, and should be used with great caution. Beck says, that two grains and a half, in solution, have destroyed life; and Taylor says, that less than half a grain has produced the same result. Gendrin also considers it to be a dangerous medicine. I would not venture to employ it unless the patient were in a state of collapse, and then would it not act more quickly in the form of phosphoric ether—"æther phosphoratus"—dissolved in sugar? I have invariably checked every case of cholera which I have seen, prior to the blue stage by calomel, combined with small doses of opium, sinapisms, warmth, absorbents, and stimulants. Mr. Batten published his mode of treating cholera by phosphorus in the solid form in 1833.

Medical Times, Sept., 1849, *p.* 225.

Treatment by Nitrate of Silver.

[Mr. George Ross found acetate of lead very useful, but, he says, it failed in severe cases. He also tried sulphate of copper, but did not like it. Mr. R. says:]

Nitrate of silver was at last given in this form:—℞. Argent. nit. gr. j.; pulv. opii, gr. ¼; Ft. pil. post sing. alvi deject. liquid. sum.

If the purging were very frequent, the pills were given regularly every hour to the extent of five or six doses, or even more if necessary. When the evacuations have been very profuse, two or three pills have been given at a dose, and repeated until the evacuations were partially or wholly arrested.—a result that invariably occurs. This remedy is as certain in its effect of restraining the rice-water purging as opium and chalk-mixture in checking the premonitory diarrhœa.

Since I commenced the use of this remedy, my assistants and myself

have treated 853 cases of diarrhœa in all its stages, and of this number, seventy only have been placed under the nitrate of silver treatment, but these seventy were the worst cases, and in the rice-water stage. They were considered by myself and assistants, as they happened casually to come under the care of either, to be beyond the reach of other remedies, and were placed upon the plan recommended as a dernier resort.

When my assistants find that the purging is not restrainable by the opium, kino, and chalk in full doses, but that the dejections become more watery and copious, the pulse begins to fail, and the powers of the system to yield, they administer the nitrate of silver pills, and I am happy to say, that the effect is so decided that fully developed collapse rarely occurs. The same remedy has been given in profound collapse, and the patients have recovered. The first case in which it was administered was that of a youth of the name of Boak, who was blue and almost pulseless, and profusely purged; nevertheless, the purging was arrested, and the lad recovered. This was the first instance of recovery I had witnessed from a state of collapse so deep.

Seventy cases of the severest kind have been placed upon this treatment from among eight hundred and fifty-three, and, in that number, there have been only five deaths.

I state, again, that these seventy cases were not all cases of collapse, though these and many more of the aggregate number were cases of cholera so called; for I confess myself quite unable to draw the line of distinction, in practice, between cholera and diarrhœa.

They were not cases of collapse, because seeing them early they were not allowed to run into that stage. In the stage of actual and deep collapse, I believe that medical treatment is of little avail, but I am satisfied that the only chance for the patient is suppression of the evacuations.

I may remark, that I have never seen any evil results spring from its use. It may be employed, with judgment, in the secondary diarrhœa as well as in the primary,—and in any case, indeed, where an arrest of purging may seem necessary; but it must not be given rashly, and when simpler remedies will effect the same end. Vomiting sometimes succeeds an arrest of the purging, but, although troublesome, it does no harm; and, if a little fever should supervene upon the use of the silver, it would, in some cases, be desirable, and assist re-action,—in other cases it can be readily assuaged by the usual saline remedies. *Med. Times, Sept. 15, 1849, p. 225.*

Remarks by the BOARD OF HEALTH.

[The following remarks are taken from a notification published by the General Board of Health, June 11th:]

Recent experience has fully confirmed the evidence previously adduced, that the localities of this disease and the localities of other epidemics are the same, not a single instance having come to the knowledge of the Board of the spread of this scourge in groups in any other than the ordinary seats of typhus and other zymotic diseases; those seats being uniformly marked by the existence of filth, bad ventilation, overcrowding, and other local causes of atmospheric impurity.

Recent experience further establishes the advantages that have resulted from the operations of cleansing. The first cases of cholera that occur in a locality are sometimes sudden, without any premonitory symptom; this suddenness of attack is in itself evidence of the local presence in unusual intensity of the causes of atmospheric impurity. As soon as cleansing operations have been carried into full effect these sudden cases cease, and instead of them diarrhœa appears, which, if promptly and properly treated, does not pass into cholera. Uniform experience shows that the first and certain effect of these cleansing operations is to stop these sudden attacks; and the cases of premonitory diarrhœa that follow, if early and properly attended to, are, in the great majority of instances, arrested at once; and thus the extension and the great mortality of cholera are checked.

The General Board of Health have to renew their former representation, that what is done against this one disease will have been done against the entire class of epidemic diseases. If, happily, cholera should not again prevail to any great extent, those exertions will be equally effectual against typhus, scarlet fever, diarrhœa, and other native and prevalent epidemic, endemic, and contagious diseases. *Lancet, June 23, 1849, p. 675.*

[Mr. AMBROSE BLACKLOCK, Assistant-Surgeon, Madras Medical Establishment, in a pamphlet on the subject of cholera, makes the following propositions:]

"1. The first alteration in the human body, in the commencement of an attack of Asiatic cholera, is the formation of a pustular eruption in the mucous membrane of the large intestine, and sometimes also in the first six inches of the small intestine, near the ilio-colic valve. These pustules are exceedingly numerous and minute, though mostly visible to the unaided eye, and, like other purulent deposits, are accompanied at first by acid exudations.

"2. The mucous surface of the large intestine is in a positive electrical condition, both before and after the appearance of the acid exudation and pustular punctiform eruption, and during the greater part of the disease.

"3. The mucous surface of the stomach, the skin, and perhaps, also, the bronchial surfaces, are at the same time, in a negative electrical condition, and secrete free alkali, simply because the mucous surface of the colon is positive, and is secreting acid.

"4. The ganglionic system of the abdomen is, therefore, in a state of high excitement, and, from excess of action, resolves the oxygen and hydrogen of the tissues into water, which passes off by the bowel; while the spinal respiratory system is in a state of great depression, and, by its diminished action, permits carbon to accumulate in the blood instead of eliminating it, as in health, from the skin and bronchial surfaces.

"5. The positive excitement of the mucous surface of the colon, and the increased morbid excitability of the ganglionic system, is occasioned by the absence of sulphureted hydrogen from the large intestine, while the depressed state of the spinal respiratory system is occasioned by a want, at the moment, of *free* electricity in the atmosphere to excite the respiratory surfaces.

"6. The pustules pass rapidly through the stage of maturation, and their contents escape into the intestine with the acid fluid, formed by the ganglionic decomposing current: and this mixture of pus and acid serum is the peculiar rice-water evacuation of Asiatic cholera.

"7. The remote occasion of Asiatic cholera is the continual use of a diet deficient in the sulphur required to assist in forming sulphureted hydrogen to preserve the colon, or part of the body requiring sulphureted animal matter, in its normal electrical condition, and so giving rise to morbid ganglionic excitability. By taking a skeleton map of the world, and brushing with colour those parts where the staple articles of diet are deficient in sulphur, omitting only those parts which afford to man abundance of animal and leguminous food, we have in the coloured portions a fair view of the world as it is liable to epidemic cholera.

"8. All the functional and structural changes of the body, occasioned by Asiatic cholera, are immediate or secondary effects of the irritation in the colon. That is to say, for example, the peculiar positive excitement of the intestinal surface increases the energy of the ganglionic centres; the ganglionic nervous currents, thus excited, occasion rapid formation and pouring out of fluid, with congestion and arrest of secretion in secreting organs, and serious lesions of the spinal cord, all tending to the continued, steady reduction of pulmonary respiration, and to death, either by asphyxia or by the gradual exhaustion of nervous excitability.

"9. Though the presence of this excitement in the large intestine be

the immediate cause of the disease, and its arrest by medicine the primary object of all rational treatment, other enlightened modes of treatment must, at the same time, be directed to the other parts of the body, secondarily affected, according to the stage of the disease.

"10. No sanitory precautions of individuals can prevent the occurrence of sporadic cases of cholera, nor can quarantine regulations of governments hinder it from becoming epidemic, unless sulphur, the inorganic conservative principle which prevents the ganglionic over-excitability, be used as a preventive remedy when the individual or the population is scantily supplied with leguminous or animal food."

This pamphlet bears evidence of being the production of one who has been accustomed to see and treat the disease in the country where *it originated*. The following are amongst its most striking passages :—

"The premonitory stage of Asiatic cholera is characterized by a very peculiar appearance of the person about to be affected. The countenance is said to wear the expression seen immediately before the accession of the cold stage of intermittent fever, but I think it is more like that of a person who has had some vague, undefined, central impression of the bowels being about to move. He seems involuntarily to wish to be quiet, though he has no sick feeling, and does not complain.

"When cholera is known to be at hand, there cannot be an excuse for neglecting to attend to this peculiar warning, and not discerning its significance.

"The powers of life appear, indeed, often to be almost annihilated immediately after this premonitory stage, and sometimes even before the stage has had time to be fairly developed, and deafness and weakness of voice may be remarked even from the first appearance of perturbation in the countenance.

"The odour of the evacuations is like the odour of blood, in the early period of the disease, and afterwards, as the collapse becomes decided, is changed to that of stale meat. These odours from the intestinal evacuations afford, I think, better information of the state of the patient than any set of symptoms. The voice may be almost gone, the stupidity great, from the deafness and want of vision, the skin very cold, and the jactitation extreme, and still I would have some good hope of the recovery of the patient, if the serous fluid from the bowels have a distinct odour of serum, while I would consider death to be almost inevitable, and that speedily, if the stale-meat odour be once fairly developed."

Mr. Blacklock considers that "death ensues speedily on an attack of cholera, owing to the increased excitability of the ganglionic system," from the absence of a due amount of sulphur in the system, and he would supply this, and promote a more equal diffusion of nervous energy throughout the system by enemata of

"Hydro-sulphuret of ammonia, one ounce, water, slightly tepid, one quart, thrown slowly into the intestine by the stomach syringe, the patient being held on his right side to forward the passage of the fluid to the colon. This is likely to be of service for a fourfold reason :—First, by the sulphuretted hydrogen and ammonia rendering the positive excitement of the intestine immediately negative excitement; secondly, by the ammonia neutralizing the acid of the mucous surface, and converting the pus in the follicles into a gelatinous mucus; thirdly, by directly lowering the ganglionic excitement, as I have already said this gas has a powerful influence in accomplishing; and fourthly, by supporting the general vital power by the diffusible stimulation of the ammonia, and determining the circulation to the surface.

"In cholera," he says we have to apply a direct sedative to the ganglionic system, through the colon, and to rouse the spinal respiratory by stimulating inhalations and frictions.

"Tins or bottles of hot water, or heated bricks to the abdomen, indeed,

heat applied in any way to that region, must be extremely injurious in keeping up the ganglionic over-excitement in cholera.

"If you required a galvanic battery to work rapidly, whether would you warm or cool it? Warm it, you will say, through its exciting fluid. Well, then, do not heat the ganglionic system in cholera, for it is too hot already. In fact, the internal temperature of the abdomen during this disease is as high as the healthy temperature of birds."

But amongst sedatives for the ganglionic system, our author decries opium, which he calls "a poison in cholera," and he is cautious how far to advocate bloodletting.

"General bloodletting is contraindicated from the commencement, except in those cases where there is decided fulness or distention of the heart and large arteries, and when, consequently, there is a probability of important organs being injured by having more inspissated blood driven into them than they can afterwards easily free themselves from.

"Before you bleed, try the effects of the hemostatic method of relieving the central circulation—that is to say, place tape ligatures at the insertion of the deltoids, and on the upper third of the thighs, and tighten them just sufficiently to compress the superficial veins. The greater part of the blood, passing into the limbs, will thus be retained in them; they, and not the heart and glandular masses, will be distended; you will have congestion in safe places; and the heart will, in many instances, be sufficiently relieved to render bleeding unnecessary."

Emetics he abjures, adding—

"Vomiting in this disease has long been considered a wholesome effort of nature to relieve the patient of some unknown impurities, instead of being seen to be, what it really is, in cholera, a symptom of sympathetic irritation in the nerves of the stomach, occasioned by actual irritation in the colon, inducing reflex irritation and reflex muscular contraction, accompanied by alkaline exudation."

Alcoholic drinks he objects to, on account of the depression that follows their use in case their first stimulant effect should fail to rouse the respiratory system: but he advocates the employment of affusion with spirit, which, he affirms, calls the respiratory and cutaneous nerves into reflex action. Epispastics and *calomel* (during the cramps, purging, &c.) he rejects.

"Peristaltic movement of the small intestines is at an end for the time. The duodenum and jejunum remain, throughout the disease, just as they were at its commencement, as is often proved by their contents after death—and the former bowel cannot, therefore, propel calomel, nor bile either, even if the stomach could retain that medicine unchanged, and pass it on."

Sponging the surface with a weak solution of nitro-muriatic acid, "to change the whole surface, if possible, from negative to positive electric;" giving drinks of water, similarly acidulated, and *after vomiting*, with the view of neutralizing free alkali, secreted by the stomach, &c.; calomel after the cramps and purging, in full doses and then with opium; and sulphur, both during convalescence and as means of prevention, are the main remedies recommended by Mr. Blacklock, who remarks—

"I hope yet to see the day when sulphur in small quantities will be regularly issued to every soldier in the field, in India, say forty grains per day, while actually marching, and twenty grains per day, during halts, as a sure way of warding off this terrible disease; and I have a firm belief that sulphur so employed, will be as effectual in banishing cholera from our armies, as lime juice has been in eradicating scurvy from our fleets."

On the subject of diet for Europeans, in hot climates, he says—

"If a native of India eat a large meal of rice, it is speedily exhaled in the form of carbon, from the lungs, liver, and skin, but chiefly from the dark, decarbonizing skin; but if a European endeavour to subsist on rice,

he can only get rid of the superabundant carbon by the liver and lungs, as his skin is not a decarbonizing organ to the full extent it is in the dark races, and the liver and lungs must consequently have too much work thrown upon them.

"Rice is not, in itself, deleterious, except in so far as it may burden the respiratory organs and lead to congestion; and it has no power in itself of inducing cholera in Europeans, as it was once supposed to have, although it undoubtedly often does so, indirectly, by being taken in quantity, to the exclusion of a pea and animal diet, the only food which can impart real healthy strength in this country, and give a man a fair chance of escaping cholera by keeping in check the excitability of his ganglionic system. When cholera is likely to become epidemic, soldiers ought to be well supplied with pea soup, made with gram, or better still, with minimaloo, in the absence of the dhal or pea of this country, and ought to be encouraged to take it in preference to rice or bread. They would thus have better legs for the road, and less liability to choleroid disease." *Lancet, July* 7, 1849, p. 14.

[An anonymous writer in the LANCET recommends quinine with calomel and opium. He says:]

I cannot forbear recording my testimony to a combination of medicines, which, in warding off and checking an attack of cholera in numerous instances, both in Europeans and natives, has been followed with the happiest results. The remedy consists of quinine, calomel and opium, in the quantities of six, four, and two grains respectively, followed by a wine-glass of brandy diluted with a little warm water. This given within the first hour or two of seizure, will be found, in a large proportion of cases, to check the disease. *Lancet, Sep.* 1, 1849, p. 14.

[Dr. P. NIDDRIE's experience has convinced him,]

That cholera, even in the stage of collapse, is quite as manageable as any other severe disease. The mode I have followed differs little from what I find Dr. Ayre so zealously recommends, and consists in placing on the tongue two grains of calomel, mixed with a little sugar, to be washed down by an effervescing draught. If rejected, the dose is repeated immediately: if not followed by vomiting, the dose is repeated in from five to ten minutes, till re-action commences, when the period between each dose is gradually extended to an hour or longer. Calomel and carbonic acid gas seem to be as powerless as other means, unless thrown constantly into the stomach; therefore this mode of giving them must be followed, and the course of the disease being so very rapid, the patient must not be left until collapse yields to the constant attacks of these remedies. I have had ample experience of the total uselessness, in cholera, of large doses of medicines given at long intervals, and am fully convinced of the great value of calomel and carbonic acid gas, constantly and perseveringly administered at short intervals. Under this treatment purging ceases, or becomes less frequent, although vomiting may occasionally recur for some time; the expression of the countenance gradually changes; the temperature of the breath and tongue rises; the pulse gets stronger and the skin warmer; cramp becomes slight, and extreme collapse is followed by little or no febrile excitement; and the gums do not even swell if care be taken gradually to discontinue the calomel by extending the period between each dose as collapse disappears. *Lancet, Sep.* 1, 1849, p. 236.

Injection of Morphia and Calomel into the Veins in Cholera.—By Dr. R. M'GREGOR, Physician to the Glasgow Infirmary.

[Observing the little power of absorption in the gastro-intestinal canal in the stage of collapse, Dr. M'Gregor was led to employ injections *into the* veins. He says:]

A solution was prepared by dissolving five grains of the crystallized muriate of morphia in an ounce of pure hot water. Thirty drops of this solution, mixed with six ounces of pure water, at a blood-heat temperature, were injected into one of the veins of the arm by means of the following

apparatus, which was adapted by Mr. Hilliard, cutler to the Infirmary, and consists of a powerful six-ounce brass syringe, with a stop-cock on the point, and of a silver tube, being the inner eyed half of a No. 2 male catheter, (from which the outer half had been cut off,) and having attached to its cut end a brass-mounting to screw upon the point of the stop-cock or syringe. At first the ordinary lancet was used, but at times there was a difficulty in introducing the point of the catheter or silver tube. I then had prepared a modification of Syme's abscess lancet, by cutting off a portion of its sharp point, and removing its curve anteriorly, retaining the handle. A probe was also used. The operation now consisted in filling the syringe as above, in expelling a small quantity of the liquid so as to ensure the absence of air, then turning the stop-cock, and laying the instrument aside, until the vein was opened, which was done as follows :—the skin over the vein, bandaged above, as usual, was pinched between the finger and thumb transversely, and transfixed with the lancet so as to expose the blue contour of the vein, which was now entered by the lancet, introduced in the usual manner, and retained; the handle is turned to the horizontal, so that the blade opens up the incision laterally. The probe is now introduced behind the blade, which is then withdrawn ; whilst the former is left, and can be retained within the canal of the vein when the patient is being bled, if you desire it,—or if not, until you leisurely introduce behind its flat end the point of the catheter of the syringe. Satisfied that it is fairly within the tube of the vein, you remove the ligature from off the arm, turn the stop-cock, and then cause the liquid to glide easily in by pressing the handle of the piston-rod till within half an inch of home. It is desirable to proceed no further, in case of any air having been admitted by the side of the rod. There is a risk of inducing inflammation if you miss the vein and inject into the cellular membrane. There is also an immediate feeling of pain, whereas in injecting into the vein there is none.

The effect of injecting the solution of morphia was highly encouraging ; it checked the vomiting, purging, and cramps in most cases, and the patients declared themselves relieved ; some slept, and others said they felt as if becoming drunk. The operation as above detailed, is simple, and its mode is readily acquired,—so much so, that the indefatigable cholera clerks, Messrs. Willis and Jacob, at last injected the prescribed quantities in their respective wards, the one without the aid of the other, but simply with that of the nurse.

For injecting large quantities of liquids into the veins, the apparatus employed by Dr. Robertson of Edinburgh, would have been preferable; but our object was to inject a quantity not exceeding six ounces, and for this I would decidedly prefer the syringe. Calomel can be administered by the mouth when the discharges have been so far checked by the morphia ; or mercury may be introduced into the veins in one of the following forms :

Take one grain of corrosive sublimate ; five grains of iodide of potassium ; warm water an ounce. Dissolve. A liquid drachm of this solution, mixed with six ounces of warm water, may be injected as above, and repeated if required. Corrosive sublimate coagulates albumen, although an excess of serum, containing the albuminate of soda, redissolves the coagulum; and hence the reason why the above solution, which has no tendency to coagulate the serum of the blood, was employed. Or.—Take of the cyanide of mercury, in crystal, one grain; warm water, an ounce. Dissolve. A liquid-drachm of this solution, containing one-eighth of a grain, may be used as above. These excite the action of the liver, and produce copious biliary stools. This I have verified upon many dogs, as well as upon cholera patients. A middle-sized dog (of thirty pounds weight) can bear a quarter of a grain, and recover perfectly; but half a grain has killed him. It is well known, however, that dogs will not bear mineral purgatives so well as vegetable. In some cases of extreme collapse we observe dark ecchymosed looking patches, more especially at the inner canthi of the eyes,—seemingly

from a stagnation of black blood. Now, it is remarkable how readily after the establishment of reaction these are removed. It is also singular to observe how much the blood alters in appearance and specific gravity; for in individuals labouring under the coma, who have had two or three days convalescence between the collapse and coma, and who during that period imbibed a considerable quantity of albuminous or milky fluids, the specific gravity of the blood stood only 1.050, and it was invariably of a scarlet red.

Med. Gaz., July 27, 1849, p. 142.

Russian Treatment by "Samboul."

[Dr. GRANVILLE gives the following account of the most improved mode of treatment adopted in Russia, and under the use of which, he states, nearly 400 patients out of 617 have recovered. He says]

The method here adopted with a patient just admitted into a hospital in a state of collapse from cholera, is to strip him instantly, and lay him, stretched at full length, on the webbed bottom of a couch raised about one foot from the ground. A series of semicircular ribs, like those in our large waggons, moveable towards both ends, and bearing a coverlet of coarse flannel, or a blanket, are then drawn over him, inclosing him thus under a covered ceiling. A couple of nurses bring each in their hands, by means of an appropriate handle, a square iron pan, holding a red-hot square pig-iron, two inches thick, over which, at the very moment of introducing the said pans under the couch, a jug of water is thrown, and the vallance of the couch is let fall around to the ground. The immense volumes of steam arising from the apparatus fill presently, and are retained within the covering, raising in a quick time the temperature of the patient to a very considerable heat, followed by perspiration; upon which he is transferred to a warm bed, and there attended to in the usual manner through the several phases of the disease, which it is not the purport of this letter to detail, as every medical practitioner in England is supposed to be familiar with it. I need scarcely add that friction is also occasionally employed.

But there is a point in the Russian practice equally novel, I think, which I desire to mention, and that is the recent substitution of a vegetable substance, first recommended by Dr. Tittman, chief physician to the Petropawlosky Hospital, in lieu of the ammoniated, as well as for all spirituous stimulants employed, with the view of dispersing the state of stagnation of blood and inward inanition. This substance was made known to me under the name of '*Samboul*,' said to be the produce of India, and to have in every case led to the most surprising results. It may be given in substance, but it is more generally employed in the form of decoction or infusion, by spoonfuls frequently administered. Its power, however, in the way of reanimating the dying energies of a collapsed patient has been such as to demand great caution, lest it should produce cerebral excitement, and thence a typhoid fever—a consequence that has often been witnessed in the Russian hospitals subsequently to the recovery from the first or more dangerous state of cholera.

Med. Gaz., Aug. 17, 1849, p. 256.

Treatment by Wet Sheet and Chloroform.

[It appears that the wet sheet has had a fair trial upon cholera cases at the London hospital, and that though it had the effect of producing reaction, all the patients died. The same fatal result followed the exhibition of chloroform, both by the lungs and stomach. As the editor of the Medical Gazette observes,]

Facts of this kind properly recorded will clear the way for improved treatment. If we cannot yet suggest any successful method of treatment, it is something to know what to avoid, by keeping an honest record of those plans which have been fairly tried, and have been found to fail.

Med. Gaz., Aug. 17, 1849, p. 256.

Treatment by Matico.

[Mr. T. SLIPPER, of Kennington, says]

I have at length been induced to treat it *as a simple* hemorrhage, from the

serous vomiting and purging leaving the blood in such an inspissated state as to render it incapable of circulation, and thus inducing rapid collapse, as in uterine and other hemorrhages. This practice has almost invariably proved successful. I find unless the styptic be very strong, it has only a partial effect; but, if given in the subjoined form, it arrests the vomiting for a time, and very frequently produces a permanent effect; it is as follows:—

Take of tinct. of matico as strong as it can be prepared, from 3 ij to ℥ss.; tinct. of opium, 3 ss. to 3j.; sp. of camphor, ♏xv. to ♏xx.; water ℥ss. M. A fourth part to be taken whenever the sickness or purging comes on: two doses generally suffice for some hours. Should there be any return, a repetition of the medicine again arrests it, and by an occasional recourse to it for two or three days, my patients have in every case completely recovered from the disease. *Med. Gaz., Aug.* 17, 1849, *p.* 296.

Spanish Treatment by Olive Oil.

[The following treatment is highly lauded by a Dr. Pedro Vazquez, who professes to have used it with great success in Spain, during the epidemic of 1833. It has, however, signally failed, when tried recently at St. Bartholomew's and St. Thomas's hospitals.]

Immediately on being attacked, the patient is to take three small cups of pure olive oil, allowing eight or ten minutes between each dose. A quarter of an hour after taking the last (or sooner if vomiting has commenced) abundance of water, rather more than lukewarm, is to be drunk until the person vomits, which result should be excited by the introduction of a feather, saturated with oil, into the throat. A slight rest can then be allowed, when more warm water should be administered (though no more oil); but when the vomiting fatigues too much, a stop should be put to it by giving a large glass of cold water . . . . . It has been observed that many cannot take the three cups of oil, as indicated, because the first causes sickness, but this will be obviated by giving a little cold water after each dose, which must all be taken, as the grand object is to varnish the intestines with oil . . . . . The oil never does harm, but, on the contrary, from the moment it enters the stomach it destroys the force of the poison which produces the cholera. If the invalid on the following day exhibits a foul tongue, a very small cup of the oil may be given, with a little cold water after, and, at the end of one hour, sufficient warm water to cause vomiting as before.

All medicines and other treatments are prohibited by Dr. Vazquez, who states that the cholera can thus be cured in a few hours, and with less trouble than a cold or rheumatism. *Med. Gaz., Aug.* 17, 1849, *p.* 283.

Treatment by Creosote

[Mr. C. N. Spinks, of Warrington, has used creosote extensively in the treatment of diarrhœa, and has also given it in cholera. Out of a large number of cases of the former disease, he tells us:]

The first 93 cases of diarrhœa were treated with the usual chalk mixture and opium, the remainder with creosote: in those treated with the former the diarrhœa continued for some days, and, when checked, was invariably followed by a disagreeable rumbling and flatus in the bowels. In the 131 cases treated with creosote, the diarrhœa *immediately* ceased, and was followed by none of the above symptoms. In the twelve cases of rice-water purging, the effect was instantaneous, the first dose generally putting a stop to the discharge. In the eighteen cases of cholera, all of whom had vomiting, rice-water purging, cramps, and blue skin, creosote had the same decided effect, at once checking the purging and vomiting, the cramps very soon afterwards subsiding, the pulse becoming full and soft, a free perspiration breaking out over the body and extremities.

Of the eighteen cases of cholera treated with creosote, I have only lost *two*, these being far gone in collapse when I was called to them. The formula in which I use the creosote is—

℞. Creosote, ♏xxiv.; mist. acaciæ, ℥ss.; sp. ammon. c. camphora, aa.

3ij.; ether. chlorici, 3iij.; aquæ, ℥viss. M. ft. misturæ. Capiat cochl. ij. mag. omni hora.

In simple diarrhœa I only give two drops every two hours, with the above stimulants, and no astringent whatever.

Med. Gaz., *Aug.* 10, 1849, p. 254.

Treatment by Galvanism, &c.

[At a Meeting of the South London Medical Society, Dr. P. Murphy remarked that]

When the collapsed stage arrived, unless galvanism did something, no other remedy was capable of propelling the crassamentum of the blood through the veins, separated as it was from the serum, which had almost disappeared. Nothing but a solid kind of coagulum remained in the veins and arteries; and how the heart was to be made to push this coagulum through was a problem he never had been able to solve.

Med. Gaz. Aug. 24, 1849, p. 332.

[Mr. T. Weeden Cooke gives the following account:]

One of the Tooting children was seized with cholera in the Royal Free Hospital. The patient was a girl about eight years old, under Dr. Peacock's charge. In about four hours she became completely collapsed, the power of deglutition had ceased, and consequently all internal remedies were useless. Dr. Peacock applied one pole of the galvanic machine over the heart, the other over the region of the stomach, or rather of the solar plexus. In half a minute the child began to rally, some strong beef tea was got into her stomach in less than ten minutes, and ultimately the resurrection was complete.

Mr. Blacklock asserts, in his pamphlet (p. 37,) that

"The sure method of restoring vital heat is to excite the respiratory muscles by sending an electro-magnetic current from the spinal respiratory bodies to the diaphragm. To accomplish this, have each wire of the machine furnished with a thin, circular, very soft metal plate; one plate two inches square for the positive wire, the other at least six inches square for the negative wire, and attached at the end of the wire by a small eye, like the eye on the reverse of a button. Bandage the positive plate to the upper part of the nap of the neck, and the negative plate to the upper part of the epigastrium; and then imitate the natural respiratory current by having the battery well charged, and the break of the machine so arranged that the succession of shocks will occur at the most about twenty-five times in a minute."

He adds, in a marginal note, that

"Oxygen has often been recommended as a remedy in cholera; but is not nearly so much required as stimulation by electric impulsion. There is enough of oxygen in the air at the worst cholera periods, but there is no free electricity then to cause it to be combined intimately with carbon."

Lancet, *July* 28, 1849, p. 88.

Internal Employment of Severe or Benumbing Cold in Cholera.—By Dr. James Arnott, Brighton.

I have to propose, as a remedy in cholera, the application of a degree of cold adequate to suppress the irritation of the digestive mucous membrane, and the unequivocal success from this practice in two cases, if it does not fully prove its value, strengthens, at least, the theoretical foundation of the recommendation.

The cold, to be effectual, should be of an intensity capable of quickly benumbing a finger immersed in it, or of about ten, or at least six degrees of Fahrenheit's thermometer below the temperature of dissolving ice. I think this will be an adequate degree of cold, provided the draughts communicating it be sufficient in quantity and often enough repeated: it proved to be so in the cases referred to. The draughts exhibited in these were prepared by putting a cylindrical tin vessel or canister containing about eight ounces of water, and having one or two teaspoonfuls of sugar or salt dissolved

ed in it, into another larger vessel containing the usual freezing mixture of ice and salt employed by confectioners. The solution in the canister had been previously cooled to 32° of Fahren., by dropping a little pounded ice into it; and when it began to freeze, it was constantly stirred until the whole was converted into a thick gelatinous substance. To this jelly, a teaspoonful or two of salt was added just before it was administered; for the purpose of still further reducing its temperature; and from six to eight ounces, or a tumblerful, was taken as a draught. A little lemon-juice will remove much of the nauseous taste of the salt.

It is almost unnecessary to observe, that until the particles of ice in the draughts are all dissolved, the intense cold will be preserved; whereas, when merely iced water is swallowed, its temperature begins to rise even before it has reached the stomach.

The cases of cholera in which this expedient has been tried, were those of a boy, aged fourteen, and of a man upwards of seventy, patients of the dispensary. To both, opium and calomel had been exhibited before the trial of cold, but without arresting the discharges, or being otherwise of apparent use. The discharges in the case of the boy were of the rice-water character, and collapse was imminent; in that of the old man, the copious excretions were still, in some degree bilious; he was tortured with cramp, but his pulse was still very perceptible. Both patients took about two pints of the jelly-ice above described; and about a pint of the same mixture was in the boy's case administered by injection. The beneficial effect was soon discernible in both instances, but more quickly in that of the adult, who took the draughts more readily and in quicker succession. In half an hour the vomiting had entirely ceased, and the cure was completed by calomel and opium. In the other case there was no vomiting two hours after the first exhibition of cold draughts; and upon the cessation of the vomiting the pulse acquired strength, and the countenance animation. Both patients soon threw up the draughts containing most salt, but not until the cold had produced its full influence; and the stomach being thus emptied, the succeeding draught had, of course, more power. There are other modes of producing intense cold noticed by chemists, and applicable to such a purpose, which might perhaps in some cases be preferable.

The possibility of thus administering ice as a jelly is important as respects its use in other diseases accompanied with irritation of the stomach. Too often has the administration of ice in disease been a mere delusion from the difficulty of swallowing it quickly enough to produce any useful effect.

Med. Gaz. Aug. 31. 1849, *p.* 374.

Treatment by Iced Water.

[An anonymus writer believes cholera to be]

Hemorrhage, i.e., that the serum of the blood is separated from the crassamentum, and the capillary vessels pour out the former from the mucous membrane of the stomach and bowels, and that those of the skin also lose their power. The larger quantity that is discharged from the former is owing, in my opinion, to the heat being so much greater than on the surface, and that that which is called cold sweat is not sweat at all, but an exudation of the serum. Taking this view of the case, such remedies should be employed as are calculated to check ordinary hæmorrhage, such as iced water freely administered internally, as well as sponging the whole surface of the body, in the first place, with cold water, and then wrapping the patient in a wet sheet (cold), and covering him with blankets. The effect of this will be to check all further exudation, by which you will generate heat, and natural sweating will be restored, as well as the secretion of the liver, kidneys, &c. The usual styptics may be employed, in addition to the above treatment, if thought advisable by the medical attendant.

You will perceive by this that I object to the use of brandy, opium, warm applications &c.

P. S. I think the exhibition of olive oil well worth trying.

Med. Gaz., Aug. 17, 1849, *p.* 286.

Treatment by Cold Affusion in Berlin.

[Mr. J. Lamprey gives the following account of the manner in which cholera was treated in the hospital "La Charité," at Berlin.]

"The remedies mostly used in the treatment of this disease were, the cold affusion, and cold fomentations to the abdomen and head; frictions of warm flannels, or sometimes jars of hot water, were applied to the feet, to keep up the temperature of the extremities. The medicinal agents with few exceptions, were not selected from any particular class, or for any other purpose than to meet symptoms.

"The patients, when admitted, were almost too far gone for any remedy to be of use . . . They were always received in a state of syncope or asphyxia, and required some powerful stimulant to restore the suspended animation; for this purpose the cold affusion was found the most powerful and expeditious agent.

"The manner of applying it in the hospital of Berlin was as follows:—As soon as the patient was stripped of his clothes, he was placed in the wooden bath before mentioned; one assistant-nurse supported him in an upright sitting position, whilst another assistant dashed a bucket of cold water on his head and back; he then took another bucket of cold water, and poured it equally quick on his face, thorax, and abdomen. The patient was then partially wiped dry, and lifted into bed, when sometimes he was wiped drier, and hot jars applied to his feet. As soon as this was done, a large sheet, saturated in cold water, and folded up, was placed on his abdomen as a cold fomentation; another smaller piece of wet linen was placed on his head. This process was repeated three times in the twenty-four hours.

"I had an opportunity of witnessing this process and its effects on several occasions. On examining a patient in a short time afterwards, I was surprised to see the immediate restoration of animation take place, though the patient had been pulseless and cold before he was placed in the bath, yet in a few moments the pulse could be felt and an increase of warmth perceived, which gradually improved. In some cases the patient began to perspire profusely, and recover immediately after the first or second application.

"The medicinal agents used were derived from no particular class, one excepted, which was used as a specific only, by the Persians originally, and lately by the Russian physicians. I allude to the radix sambul. It is a root of a very peculiar volatile odour, strongly resembling the perfume of violets, on which, in all probability its virtues depend, as great caution is required in its preparation, in infusion and decoction.

"The issue of the case in which this has been tried should certainly be no criterion of its value. An emetic of a scruple of ipecacuanha and one grain of potassio-tartrate of antimony had been administered in one case, probably on the same principle that it is sometimes given in fevers—namely, to cut short the attack. Unfortunately, where this had been tried, though the case appeared favourable enough for it, it did not succeed; the patient died in a few days after, from some cerebral complication.

"Dr. Ward, of the Bethanian, informed me that he treated two cases with nux vomica, giving ten drops of the tincture three times a day; and that one case recovered, the other sunk. He also told me that a friend of his gave charcoal with good success.

"Chloroform had been tried on two occasions; the first case derived a temporary benefit from it, as it completely subdued the spasms, and afforded tranquility for about three hours; but its effects were not permanent, as these symptoms were renewed as soon as its effects were over. From the partial success in one case it was tried in another; but unfortunately *immediate death was the consequence.*"

The success of the "cold affusion" plan even Mr. Lamprey allows not to have been very encouraging.—"the cures being only in the ratio of sixteen per cent. So much for the the *cold-water* system. *Lancet, July 7, 1849, p. 16.*

Treatment by Emetics, &c.

[At a meeting of the South London Medical Society,]

Mr. Greenwood stated that he had prepared an official report with respect to the state of the public health in Clapham. The cholera was confined to peculiar localities. In the Wandsworth road as many as thirty deaths occurred in seventeen or eighteen houses; and a very large mortality occurred in another but smaller district. Having traced the existence of the cases into the Wandsworth road to imperfect drainage, bad water, and the condition of the neighbouring sewers, it was of importance to consider how far the same causes had operated in other localities. In 1832 the cholera seemed to follow the same course, crossing Battersea fields, and passing up Acre lane, to terminate in the same spot where it had now proved so fatal. In Park lane, and Acre lane, there were last month, in about ten houses, no fewer than sixty cases of cholera with collapse, of which eight proved fatal. In almost every case there were premonitory symptoms of diarrhœa. In Wandsworth most of the cases occurred without any premonitory symptoms whatever. The first case to which he should refer was that of a young man, twenty-one years of age, residing in Cook's Buildings, Acre lane. He had been to Bucklersbury, in the city, with his master. He was there seized with vomiting, cramp, and diarrhœa. He returned to Clapham. Within ten minutes after his return he was in a state of collapse.

Adopting the plan of treatment used by Mr. Pugh, of Gracechurch-street, he (Mr. Greenwood) administered an emetic in the first instance, namely, twenty-five grains of ipecacuanha. Under the particular mode of treatment which was so commenced, nine out of the ten patients were found to recover. He had adopted it with success. The man recovered. The case was seen by Dr. Silvester, Mr. Taylor, and himself. The next case was one which was subjected to the same mode of treatment; the man recovered in twelve hours. The third case was a fatal one: it had advanced too far; he was told of it at one, and the man died at four o'clock. There were in the same place, two other cases. The man's child was seized with the disease and died; and his wife, who was also seized, died in about eight hours. In each of the houses immediately adjoining, cholera broke out, and one person died in one of these houses two days ago. About twelve cases occurred in the locality where the first case of fatal cholera was observed. In other cases recovery was effected by the treatment to which he had referred, the emetic being always followed by a dose of ether, opium, and chloroform. The effect of the emetic seemed to be that the secretion became tinged with bile, and where that was the case he had found invariably that recovery followed.

Dr. Lloyd observed that they were all agreed in thinking there was some influence in the air which produced certain kinds of complaints at particular periods. The same cause might give rise to other complaints at particular periods. It was their duty, then, to discover what were the causes which gave rise to this disease. He then described two localities which had come under his observation; the first being Silver-street, Rotherhithe. The privies entered into a drain which had once had communication with the Thames; but that had been cut off. All the privies then ran into the cess-pool. There were eighty cases and thirty-eight deaths in the course of a fortnight. The water of the well from which the inhabitants derived their supplies, smelt of hydro-sulphuret of ammonia. No sooner had the communication of the sewer with the Thames been opened, the sewer cleaned out, and the people prevented from drinking the water of the well, which was filled up, than cholera ceased. Within half a mile of the same place stood two rows of houses back to back. The privies of seven houses on the one side emptied into a sewer, which opened to the Thames at one end. In those houses there had been no fewer than twenty-five cases of cholera, and fourteen deaths. One house had a pump-well railed off, to which the other houses had no access. Only one case had occurred there.

But the inhabitants of the other houses obtained their supplies of water by going to the sewer. That was the water they drank. In Charlotte row they went to that sewer to get water. In the last nine days there had been no fewer than eight fatal cases of cholera. If anything were required to prove the effect of local causes in producing cholera, these two instances are sufficiently strong. When cholera was raging in Silver-street it was not so in any other part of Rotherhithe. There were other cases which proved the disease to be contagious. In Gillham's court a man, his wife, his son, and his daughter, were seized within twenty-four hours, and died. The nurse did not complain at the time; but some persons having gone into the house found her there lying dead. Near the house was a privy, which, owing to a quarrel, had not been cleaned, and which was creating a great pestilence. Six persons died in that house, but none in the next, which stood in the same position as regards the privy. If the local cause only were sufficient to account for the cases that had occurred, it ought to have produced the disease in both houses. Some of these six cases ought rather to be attributed to contagion. In another case a woman bought a bed which had belonged to a man named Haynes, who had died of cholera in Lower Rotherhithe. She and her children, living about 300 yards from his house, slept on the bed, were seized with cholera, and died. They did not know that it had been in possession of a man who had died of cholera. In their own immediate neighbourhood there was no cholera. There was but one case in the same street. The nurse who attended Haynes died. Mrs. Reid, a remarkably healthy woman, who nursed a man named Moore, was seized, and died. Two cases occurred on board the Betty, in the Surrey canal. The captain's wife, who lived at Holloway or Hampstead, came to see her husband, and finding two men ill, waited on them; next day she was seized with cholera and died. Mrs. Snowden came to nurse Captain Bews, and left without symptoms for a place where there was no cholera. She died; her child also died. Her mother came from Bermondsey to nurse her. The mother was not infected in Rotherhithe, but went home, was seized, and died. A tinman, in Bishopgate street, had gone to Shoreditch to see a cousin, who had cholera. Three days after, at his own residence, he was seized with cholera, and died in twelve hours. Four hours after his wife was seized, and died in about twenty hours. His sister, who attended him was also attacked, and died. The case occurred at the same time Mr. Key was so ill. The man had sent his clothes to a woman who lived at the further end of Bishopgate to be washed. After she took them home she died of cholera. The conclusion to which he had arrived was that cholera, like typhus, was, in certain cases, contagious. In Guy's Hospital, with which he was connected, typhus was not so, because, by judicious distribution, that hospital had never more than three or four cases in one ward. But no one could doubt that at a fever hospital, or as in Edinburgh, where the infirmary had distinct wards for fever, the surgeons, nurses, and others, became liable to fever. If the poison of typhus could be so intensely concentrated as to make it contagious, might not cholera also be rendered intensely so? This, at least, the profession had learned from what had taken place —they had learned a good many modes of treatment which were to be avoided, and they had also learned some which had proved successful.

Med. Gaz., Sept. 7, 1849, *p.* 429.

Treatment by Chloroform.

[Dr. John Davies, of Hertford, gives chloroform internally, both in the premonitory diarrhœa, and in the stage of collapse. He says,]

It should be given mixed with mucilage, in doses from mv. to mxv. *every* hour or two. One dose will frequently stop the diarrhœa and sickness. The patient should drink plentifully of milk and cold water, with a little sesquicarbonate of soda in it. The warm bath, with a large quantity of common salt in it, frequently repeated, is a valuable auxiliary. But chloroform is the remedy. *Med. Gaz., Sep.* 14, 1849, *p.* 379.

Treatment of the Premonitory Diarrhœa by Pernitrate of Iron.—Dr. T Reynolds, of Brockville, says,] I have for some months past directed my attention to various preparations of iron, the tr. mur. ferri among the number, to check the diarrhœa which precedes the common cholera of the country, and have found a preparation of pernitrate preferable to all others. In no instance have I found it fail to check the first onset of diarrhœa; and in many severe cases where the disease had made considerable progress, I have easily controlled its advance by the administration of a few doses of the preparation. It is frequently necessary to remove some obstruction of deficient secretion, by the use of a dose of calomel or castor oil; of course the practitioner must be guided by the circumstances of the particular case.

Mr. Kerr, of Dublin, some years ago, recommended a preparation of the pernitrate, made by acting upon iron by dilute nitric acid, till a saturated solution was obtained, then adding a small quantity of hydrochloric acid to prevent decomposition. Notwithstanding this addition, a deposit generally takes place of the sesquioxide, which of course is an objection to his preparation.

Mr. Duhamil found that the magnetic oxide was changed into the state of sesquioxide (see Am. Journ. of Pharm., vol. xvii. 1), and he recommended the addition of a quantity of sugar instead of the hydrochloric acid to prevent this contingency. His formula appears to be a valuable one, and is as follows:—Take of iron wire free from rust, and cut in several pieces, 6 drachms; nitric acid, 1½ fluid ounces; water, 8 fluid ounces; sugar, 14 ounces; dissolve the iron to saturation in the dilute acid, by allowing them to stand 12 hours, with occasional agitation; filter and add the sugar which is dissolved by a gentle heat, and the solution filtered if necessary. One reason for preferring this preparation is, that the iron is here in the state of magnetic oxide, and it has been every where observed that during the prevalence of cholera, that the atmosphere is singularly deficient in electricity; the employment of agents likely to supply electricity, or its closely allied agent, magnetism, is worthy of attention (!) To each ounce of the above syrup I add of tinct. opii. 3 i., sp. camphor, gtt. xxx.; or where there is much pain, of the tinct. capsic. 3i. to the ounce of syrup. The dose of the mixture, 16 to 20 drops in a little water, repeated every hour, till relief is obtained; should there be much pain or prostration, the dose to be administered in a little burnt brandy.

I should be glad to hear that this preparation has been made a successful trial of, as it has in my hands proved a valuable auxiliary in the treatment of a very troublesome and often alarming class of complaints with which we are every summer more or less visited.—*British American Journal August*, 1849. *Med. Gaz., Sept.* 21, 1849, *p.* 521.

Treatment by Chlorine.

[Mr. C. W. Mann, of Clerkenwell, recommends the liq. chlorinii of the Edinburgh Pharmacopœia, a concentrated watery solution of chlorine, with a little sulphate of soda. He says:]

Within the last four days I have used it in nearly one hundred cases varying from the mild form of diarrhœa to severe forms of cholera. It has invariably stopped all pain, purging, and vomiting; I have only lost two cases, both of which were far advanced in the stage of collapse when I was first called in. The dose I give is from 3j. to 3iss. diluted with water, every hour until the symptoms are relieved. *Med. Gaz. Sept.* 21, 1849 *p.* 506.

Treatment by Injections into the bladder.

[M. Piorry recommends injections into the bladder.]

Among the remedial measures proposed, we must not omit M. Piorry's. This gentleman considering, that cholera patients die for want of water in the blood, had this liquid thrown, in large quantities, into the *bladder* of a man dying of the disease. No less than two quarts were injected in one hour, and absorption was rapidly proceeding, as ascertained by the plessimeter; the pulse rose; the veins, which were almost empty began to refill, and the man was improving, *Lancet, June* 30, 1849, *p.* 699.

181.—ON THE PATHOLOGY AND CAUSES OF CHOLERA.

I. Pathological Appearances.

[The *post-mortem* appearances after death from cholera have been examined on a large scale and recorded in minute detail during the late epidemic. MM. Tholozan and Levi, at the Hôpital du Val-de-Grace at Paris, and Dr. W. T. Gairdner, at the Royal Infirmary of Edinburgh, have, in particular, given elaborate accounts of the appearances presented by large numbers of cholera subjects. These accounts will be found in the London Journal for August, 1849, p. 750, and the same Journal for October, 1849, p. 929. It is to be regretted that the careful and laborious investigations of these gentlemen should have been so unsuccessful in elucidating the true pathology of the disease. The observations of the French pathologists have been carried to an extreme, and even ridiculous degree of minuteness: thus, they speak of "rose-coloured patches," as distinguished from "red patches" of "thick arborizations," and "fine arborizations." We therefore prefer to follow Dr. Gairdner, and would thus epitomize the results of his investigations, *which are, in the main, of a negative character.*

1. The subjects attacked, seemed to be chiefly persons in health, or those free, at least, from acute or actively progressing disease. It appears, says Dr. Gairdner,]

That the opinion which has been so extensively prevalent since 1832, that cholera attacks chiefly or exclusively individuals of unsound constitution, or bearing the traces of previous organic disease, is not borne out by the facts of morbid anatomy; and, in particular, that there is no evidence whatever that previous disease of the intestinal canal predisposes to cholera.

[2. The nervous system presented no lesion worthy of remark.

3. The blood did not differ in colour or coagulability, from its usual condition. The serum was remarkably viscid, chiefly in cases fatal during collapse or early reaction; this viscidity being due to the loss of fluid matter by the intestines. *Congestion was not at all an essential or universal appearance.*

4. The liver appeared healthy, though mostly paler than usual; and the gall-bladder was usually full of healthy bile.

5. The kidneys were in many cases in a similar state to that which occurs after scarlatina, "the cortical substance being pale and turgid, and the tubuli uriniferi gorged with imperfectly developed epithelium, which was mostly loaded to an unusual extent with oleo-albuminous granules."

6. All the other glands preserved their natural appearance, and their secretions were usually normal in character.

7. The intestinal canal was, not uncommonly, natural throughout in colour and appearance. In about two-thirds of the cases, however, there was what the French describe as "*psorenterie*," a prominence of the aggregated and solitary glands, but especially the latter. Patches of ecchymosis were also frequently found, especially in the cœcum.

8. The contents of the intestinal canal resembled in appearance the characteristic cholera stools. They differed, however, from the latter, in invariably containing immense quantities of perfect epithelium, which had become detached from the mucous membrane by maceration after death.

In the Medical Gazette for November 16, 1849, at p. 844, T. J. Herapath, Esq., of Bristol, gives the following as the results of his investigations into the *chemical composition* of the blood and discharges in cholera. He says,]

It will be seen that the venous blood in cholera differs from the healthy

fluid—*first*, in containing a smaller amount of serum, and a larger proportion of globules and albumen; *secondly*, in being deficient in fibrin, and the inorganic salts, more particularly in those which are present in the serum; and *thirdly and lastly*, in containing a vastly abnormal proportion of urea, uric acid, and the constituents of the bile. It will also be found, 4. that the rice-water evacuations, and in fact all the excretions in this disease, are invariably alkaline. 5. That the alkalinity depends partly upon the presence of carbonate of ammonia, and partly, also, in the case of the dejections, upon that of the carbonates of potash and soda. 6. That the proportion of carbonate of ammonia existing in the excretions increases in a direct ratio to the duration of the disorder. 7. That the fæcal discharges in cholera differ from the healthy fæces, besides in the above respects, in containing a much larger comparative proportion of the soluble inorganic salts, and also of the ammonio-phosphate of magnesia, and the oxalate of lime.

II. Microscopical Appearances of the Evacuations.

[Dr. Gairdner gives the following description of the cholera stools:]

These discharges separate by filtration, or on standing, into a colourless or slightly coloured fluid, of an alkaline reaction, and a flaky sediment. The former is usually of a specific gravity, from 1005 to 1010, and contains, therefore, a very small proportion of solid matters; these have been shown by Dr. Parkes to consist chiefly of salts. Repeated examinations of this fluid have shown, during the late epidemic, (as Andral showed in the former,) that albumen, as tested by heat and nitric acid, is not necessarily present in it. Indeed, the presence of albumen usually coincides with that of a small quantity of blood, which is frequently present. The fluid, however, contains *constantly* a small quantity of an organic substance which is precipitated by alcohol, by corrosive sublimate, and (when acidulated) by ferrocyanate of potash; and which presents, in other respects, the chemical reactions of mucus.

The flakes which form the sediment of the cholera stools, have likewise the ordinary chemical reactions and physical properties of mucus. They are, however, opaque and turbid, and when submitted to the microscope, show a hyaline finely-striated basis, involving numerous granules, nuclei, and cells. The granules and minuter molecules require no particular description. The nuclei are from 1-250th to 1-180th of a line in diameter, circular or slightly oval, and not affected by acetic acid. The cells are comparatively few in number, mostly globular, seldom exceeding 1-150th of a line in diameter. Some of them are but little affected by acetic acid, and single-nucleated; others present all the appearances of perfect pus-cells, being two, three, or even four-nucleated, and having the cell-wall rendered very transparent by acetic acid. The most common appearances, however, were the nuclei without cells, above mentioned.

[Respecting the *microscopical appearances* of the cholera evacuations, however, there has been no little discussion. In the beginning of July last, Dr. F. Brittan and Dr. J. G. Swayne, of Bristol, first saw in rice-water dejections, certain bodies which they regarded as peculiar and characteristic. The first description of these bodies appeared in the Medical Gazette of Sept. 28th, p. 530. Dr. Brittan there states that what he terms the "annular bodies," were found by him, generally in abundance, in the rice-water dejections and vomited matters from cholera patients, and also in the stools of severe choleraic diarrhœa; while he could not meet with them in healthy solid motions, nor in the fluid stools of typhus and other diseases. He found similar bodies in fluid condensed from the atmosphere of places where cholera was rife; while in situations free from cholera, they were sought for in the atmosphere in vain. The only difference between the "annular bodies" found in the atmosphere, the vomited matter, and the dejections, was in size; and as the sizes were progressive, it was concluded that the "annular bodies of atmosphere, vomit, and dejection, were but the three stages of development of one and the same body." Other peculiar

bodies were also met with, but much more rarely—oval cells, containing a ball of granular matter, like a vitellus,—regarded by Mr. Swayne as the perfect cholera-cells. Specimens procured from the atmosphere, cholera vomit, and evacuation, were sent by Dr. Brittan to Mr. J. QUEKETT, who pronounced them to be "successive stages of development of the same body," which he believed to be "of a fungoid nature." In the London Journal for November, 1849, at p. 1051, Dr. Swayne gave a minute account of the cholera evacuations, including a description of the cells or bodies in question. The following are extracts from his description:]

Cholera evacuation chiefly differs from healthy fæcal matter in the following points:—1. The great bulk of the evacuation consists of a thin serous fluid, in which are floating a large quantity of mucous globules, mixed with a hyaline basis. 2. It contains little or none of the amorphous matter tinged with bile. 3. It contains the same *debris* of animal and vegetable matters from the food, but in less quantity. 4. It contains much less epithelium than healthy fæcal matter. 5. It often presents a large number of crystals, which form the ordinary constituents of urinary deposits, especially triple phosphate, and lithate of ammonia; more rarely, lithic acid and oxalate of lime. It contains little or no chloride of sodium. 6. The most important difference is, that it presents those cells to which I have so often alluded, and which I have never detected in healthy evacuations.

These cells vary very much in size and apparent structure during the different stages of their development. The smallest are of the same size as, or even much less than, blood globules; so that, to show them properly, an object glass of high magnifying power, such as one-eighth, one-twelfth, or one-sixteenth of an inch is required. They are very transparent, and, like blood discs, appear to be flattened cells; but the thickness of their walls causes them to resemble rings in appearance. Their interior is almost entirely destitute of granules. Their walls refract light powerfully; they sometimes present a clotted or even cellular appearance, and there is usually a transverse fissure or crack at some point of their circumference. In some of them, I have observed very minute cells or buds, projecting at different points of their circumference. Fragments of them present the appearance of small segments of circles. Cells of such dimensions are most usually found in the first portions of the alimentary canal, especially in the matters ejected by vomiting. I have, however, found them present in large numbers in the fæces, together with other cholera cells of much larger size. These small cells precisely resemble, and are, in fact, identical in appearance with, those which Dr. Brittan has discovered in the atmosphere.

The medium and large-sized cells (as usually found in cholera evacuations) distinctly resemble the small cells in appearance, but they are coarser and more granular in structure. Between the three, every gradation may be met with, both as to form and size. The medium cells appear like thick, but somewhat irregular rings; but, on altering the focus of the microscope, they can be observed to be flattened cells, with granular contents, and in some cases containing distinct cells within them. Their walls appear thick, and cellular in structure, the arrangement of the cells sometimes giving them the appearance of transverse striæ. The walls have usually a great tendency to split at four or five points of their circumference; and, when split by gentle pressure, the whole cell divides into four or five fragments, and gives exit to its granular contents.

The larger cells (as usually met with) are more irregular in shape, and cellular in structure. They are semi-opaque, of a dirty-yellow colour, and have lost much of their resemblance to rings. On bringing their surface into focus, three or four cracks can usually be seen upon it, which appear deep fissures when viewed in profile. The cell wall is distinctly cellular in structure. The cell often contains within it other cells of a similar nature. When one of these large cells is crushed by pressure, it breaks

into a great number of fragments, of a round cellular form. Sometimes, however, the fragments have an angular character.

A very short time ago, I had an opportunity of examining the only perfect specimen of these cells which I have seen. In one of my earlier examinations I met with a large, well-developed cell, but this did not perfectly reveal the structure, and it is only lately that I have seen any which do this. Their walls were thick, and studded externally with numerous cells or buds. These appeared to be arranged in concentric circles. The cells being somewhat globular, the centre is first brought into focus, when it is seen to be occupied by two or three of these buds, with intervals between them. On gradually bringing the rest of the cells into focus, wider and wider circles of these buds are successively displayed, until the outer margin or ring of buds is brought into focus. The cells forming these circles are connected by very distinct concentric lines.

The parent cell is seen to contain within it a mass of granules, which in imperfectly developed cells, does not quite fill its interior. On crushing one of the parent cells, it gives exit to its contents, consisting of granular matter, somewhat resembling the most minute cholera cells in appearance. Well-developed large cells of this kind are usually tolerably transparent, and of a dirty-yellow colour.

[Mr. Busk, the president of the Microscopical Society, has denied (Medical Gazette, Oct. 19th, p. 692,) that the bodies described and exhibited by Drs. Brittan and Swayne, were new or peculiar. He has affirmed that the "perfect cholera-cells" of Mr. Swayne were nothing more than a species of *uredo*, a kind of smut frequently found on wheat, and specimens of which he found in a loaf of brown bread purchased at Greenwich; and likewise that the so-called "anuular bodies" were merely altered starch granules, or else portions of the cells from the inner coating of bran.

Dr. W. Baly and Dr. W. W. Gull, the cholera committee of the College of Physicians, after making a minute and searching experimental inquiry into the facts stated by Drs. Brittan, Swayne, and Budd, have published a report of their investigations (Medical Gazette, Nov. 2, p. 775). They state that the principal results at which they have arrived, are the following:]

"1. Bodies presenting the characteristic forms of the so-called cholera fungi are not to be detected in the air, and, as far as our experiments have gone, not in the drinking-water of infected places.

"2. It is established that, under the term 'annular bodies' and 'cholera cells or fungi,' there have been confounded many objects of various and totally distinct natures.

"3. A large number of these have been traced to substances taken as food or medicine.

"4. the origin of others is still doubtful; these are clearly not fungi.

"5. All the more remarkable forms are to be detected in the intestinal evacuations of persons labouring under diseases totally different in their nature from cholera.

"Lastly. We draw from these premises the general conclusion that the bodies found and described by Messrs. Brittan and Swayne are not the cause of cholera, and have no exclusive connection with that disease; or, in other words, that the whole theory of the disease which has recently been propounded is erroneous, as far as it is based on the existence of the bodies in question."

[Mr. T. J. Herapath, of Bristol, while allowing the existence of certain peculiar bodies in the cholera evacuations, denies their constant occurrence in the air and water of infected neighbourhoods, and thinks that the cellular character of the bodies is not sufficiently evident. He says that, though they possess many of the outward appearances of a cellular organism, their behaviour with re-agents is of a different character. It is well remarked by Mr. Herapath that:]

If it is possible to be proved indisputably, only in one instance, that a

case of cholera may occur at the same time that these cells are absent both from the water and from the air, it is evident that we must look in some other direction for the *fons et origo mali;* or, at all events, if they are truly the cause of the disease, then they must be capable of entering into the human organism by some other means than we are at present acquainted with.

[Dr. N. PARKER, Lecturer on Microscopical Pathology at the London Hospital, observes, in a paper published in the Medical Gazette, Oct. 19th, p. 671, that if these bodies do exist, and even if they are of a fungoid nature, it does not therefore follow that a casual relation obtains between these fungi and the diseased state. The following considerations lead him to believe that such a relation does not obtain:]

1st. The active principle of the *fixed* vehicles of contagion cannot be proved to be a fungus, and therefore analogy would lead me to predicate the same respecting that of contagious atmosphere.

2nd. Even were fungi present, they must be proved to be *essential*, and not accidental; the cause of the disease, not its symptom; for fungi are present in various and most different states of the economy, often without giving rise to any particular symptoms.

3rd. But these bodies do *not* seem to be invariably present in the evacuations in cholera; they cannot, therefore, be its cause.

4th. The presence of a few fungi does not serve in any way to explain the terrible symptoms of cholera. Nor is our knowledge of the essential nature of this mysterious affection thereby materially advanced.

[It is necessary to state that Dr. Swayne has since (Med. Gazette, Nov. 16, p. 860) replied to Mr. Bush's observations, giving an elaborate account of the differences between his "cholera-cells" and "annular bodies," and the uredo and starch granules which Mr. Bush supposed them to be. Dr. Swayne still maintains the peculiar and distinctive nature of these bodies.

Of the appearances seen by other observers, there is no need to say much. In the Medical Gazette for Oct. 5th, p. 579, Dr. T. WILLIAMS, of Swansea, gives an account and engravings of the appearances which he saw in rice-water evacuations. The peculiar bodies which he observed, consisted of flattened polygonal (for the most part pentagonal) corpuscles, the interior of which was incompletely filled by a mass of molecules aggregated in a spheroidal shape, and presenting in the centre a pellucid nucleolar point. Can these be identical with the perfect "cholera-cells" of Dr. Swayne? M. POUCHET states (Medical Gazette, Sept. 28, p. 545) that he has found vibriones in the rice-water dejections; and Dr. WALDO BURNETT, of Boston, U. S., has found them in great abundance, not only in the stools, but in the substance of the muscles. (London Journal, Oct., 1849, p. 950). When this statement was published, Dr. Burnett had not, unfortunately, had an opportunity of repeating his observations.

III. CAUSES OF CHOLERA.

[If the intimate pathological nature of cholera is uncertain, no less are its causes involved in obscurity. Abundance of speculation has been hazarded upon the subject, but the discussion to which it has given rise has hitherto been barren of any very practical result. Our space will only make a small opening at the verge of the anus, and through this wound allow us to refer briefly to some of the papers which have been written upon the subject, since the publication of our last volume.

Electrical Theory.—Certain facts connected with the history of the late epidemic at Paris, (for which see Lancet, July 28, p. 94, and Medical Times, June 23, p. 659) show that there is at least a very striking coincidence between the amount of electricity in the air, and the virulence of the cholera epidemic. In a letter to the President of the French Academy, bearing date, June 10th, 1849, M. ANDRAUD stated that he had been making daily experiments upon the action of the electrical machine, for the previous three months. He said:]

The machine I have used for my daily observations is rather powerful;

in ordinary weather it gives, after two or three turns of the wheel, brilliant sparks of five or six centimetres. I have remarked that since the invasion of the epidemic I have not been able to produce on any one occasion, the same effect. During the months of April and May, the sparks obtained with great trouble, have never exceeded two or three centimetres and their variations accorded very nearly with the variations of the cholera; this was already for me a strong presumption that I was on the trace of the important fact that I was endeavouring to find. Nevertheless, I was not yet convinced, because one might attribute the fact to the moisture of the air, or to the irregularities of the electric machine. Thus I waited with impatience the arrival of fine weather and heat, to continue my observations with more certainty. At last fine weather, and to my astonishment, the machine, frequently consulted, far from showing, as it ought to have done, an augmentation of electricity, has given signs less and less sensible, to such a degree, that during the days of the 4th, 5th, and 6th of June, it was impossible to obtain anything but slight cracklings, without sparks. On the 7th the machine remained quite dumb. This new decrease of the electric fluid has perfectly accorded, as is only too well known, with the renewed violence of the cholera: for my part I was not more alarmed than astonished—my conviction was complete. I saw only the consequence of the fact already supposed. It may be imagined with what anxiety, in these moments of the crisis, I consulted the machine, the sad and faithful interpreter of a great calamity. At last, on the morning of the eighth, some feeble sparks reappeared, and from hour to hour intensity increased. I felt with joy that the vivifying fluid was returning in the atmosphere. Towards evening a storm announced at Paris that the electricity had re-entered its domain; to my eyes it was the cholera which disappeared with the cause which produced it. The next day, (Saturday, the 9th,) I continued my observations; the machine, at the least touch rendered with facility some lively sparks.

[Now it is stated that in the six days following the 8th of June, *the mortality in Paris fell gradually from* 667 *to* 355. Another very curious circumstance is related by Dr. Kidd, of Limerick. While the epidemic was raging in that city, a large magnet, capable of sustaining seventy pounds, was watched daily. No variation took place in it. But on the appearance of the disease in Dublin,—100 miles east of Limerick,—the cholera being quite gone from the latter place, the magnet quite suddenly lost nearly all its power. (Medical Times, July 14, p. 25)

Deficiency of Ozone in the Atmosphere.—This theory has been advocated by Mr. R. Hunt, (Lancet, Sept. 11, p. 473.) It is true, apparently that there has been less ozone than usual in the atmosphere of London: but a much larger number of facts bearing on this point must be collected before any just induction can be drawn.

Poisoned Water.—During the late epidemic, the following circumstances occurred:—At a row of houses in Wandsworth, twenty persons of the middle class of life were successively cut off by cholera in a few days. As, by the bursting of some drains, owing to the heavy rains a few days before, the water used by the inhabitants had become contaminated by admixture with the cess-pool water, it was supposed by some that the patient had died from drinking poisoned water. Dr. John Snow adopted this explanation. (Medical Gazette, Sept. 21, 1849, p. 504.)

Dr. Lloyd, also, as will be seen by referring to p. 343 of the present volume, ascribes the occurrence of some cases to a similar cause.

Fungus Origin.—Dr. T. K. Mitchell, of Philadelphia, after showing (Medical Gazette, Oct. 5th, p. 602,) that there are certain points in the history of the march of cholera which cannot be explained adequately in any other theory, says:]

But if we assume for cholera a fungous origin, all difficulties vanish; and, as in the case of yellow fever, an easy explanation may be given of every apparent incongruity. We have only to suppose, what is known to happen in other cases, that the fungi, on which cholera is assumed to depend, ac-

quire at times, as do the germs of some contagious diseases, an unusual power of reproduction and diffusion, a greater potency of expansion. Such germs may be carried by men, and goods, and ships, and may make a slower progress by their own unaided activity, or be scattered by the winds to regerminate wherever special conditions are to be found. Thus can we see why the poison prefers the route of streams, or infests the damp parts of cities; and why classes living in clean apartments in dry districts suffer so little.

[*Specific Morbid Poison.*—The theory which ascribes the production of cholera to a specific morbid poison, which is reproduced in the body of each person affected with the disease,—involving, as it does, the difficult and important questions of *contagion* and *quarantine*,—has given rise to much discussion. Facts in great abundance are brought forward by both contagionists and non-contagionists, in support of their respective opinions. And both classes of facts force themselves, more or less, upon the notice of those who have no particular theory to support: as an example of which, we may refer the reader to pp. 343-4 of the present volume. Indeed this question, as an anonymous writer (Medical Gazette, Oct. 5. p. 600,) well observes,]

Scientifically considered, appears hardly susceptible of a rigorous solution. Every case of seizure following on communication with an infected person may be met with a case, equally authentic, of seizure following on arrival in an infected place, or on respiration of contaminated air. On the other hand, every case of escape, notwithstanding exposure to effluvia emanating from the sick, may be counterpoised by equivalent instances of escape notwithstanding residence in a contaminated district, or immersion in a contaminated atmosphere. The rejoinder, founded on a presumed lack of predisposition in the individual exposed, is equally available on both sides of the question; nor can it ever be certainly known, with respect to either of the assigned causes of infection, whether it did or did not co-operate with some other; nor to which of several influences, all possible, perhaps all coexistent, the observed effect is due.

[We believe, however, that wider generalizations than we at present possess, may advantageously be made, and we wish that some of the accomplished physicians of the present day would enter into a close and candid examination of all the evidence collected on the subject. In the mean time, however, it is interesting to know, that, in the words of the writer above quoted,]

Practically, the question is conclusively settled in the non-contagionist sense. The experience of our own hospitals and hospital ships (especially the Dreadnought and the Dover,) has proved that *the physicians and nurses of cholera patients are not more liable to the distemper than persons not so engaged.* And the experience of Naples, Vienna, Moscow, and other continental towns, has proved, beyond dispute, the utter inefficacy of quarantine regulations to repel epidemic invasion.

A SYNOPSIS,

CONTAINING A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THE FOREGOING PAGES OF THIS VOLUME; AND SHOWING, AT A GLANCE, THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE LAST HALF YEAR. (ARRANGED ALPHABETICALLY.)

DISEASES AFFECTING THE SYSTEM GENERALLY.

ANÆMIA.—Give nourishing diet, with as much animal food as the patient can bear; let the patient be exposed "to the pure air and light of heaven as free and as long as the strength and sensibility will bear; promote the natural excretions by appropriate means: and give tonics, especially iron, the syrup of the iodide, preceded or not by some mild bitter. Employ diffusible stimulants, sedatives and narcotics, external stimulants, rest in the horizontal posture, and warmth to the extremities, when special circumstances point out the necessity for these means. And if the nervous symptoms do not cease with the removal of the anæmia, give the metallic tonics, zinc, silver and copper. (Dr. C. J. B. Williams, p. 32.)

In those cases of anæmia which are not benefitted by iron, give salts of manganese. The carbonate or phosphate may be given in the form of pill, to the extent of three or four grains daily; or the phosphate or iodide may be given in the form of syrup, according to the formula at p. 294. (M. Hannon, p, 35.)

CACHEXIA.—In scrofulous, syphilitic, or cancerous cachexia, manganese has been recommended. (See "*Anæmia.*")

DROPSY.—Give wine of colchicum, beginning with 3ij. daily, and increasing the dose by about ℳxx daily. When thus given it is a powerful hydragogue. (M. E. Vandezande, p. 288.)

Following Scarlatina.—Give a brisk purgative, and follow it by the liberal use of antimony, and the antiphlogistic regimen. In some cases leeches may be applied over the region of the kidneys. (Dr. Newbigging, p. 26.)

Let a flannel dress be worn, the warm bath be used occasionally, and antiphlogistic treatment employed. In the advanced stages, give tinct. ferri sesquichlor. (Dr. Hughes, p. 31.)

Give mild diuretic salts, as the acetates of potash and soda, with spirit of nitric ether; and use warm baths, and let the skin be rubbed with oil of turpentine. Take especial care that the child is kept wrapped in flannel and in a warm atmosphere. If the child continues pale and weakly for some time, give iron, and recommend change of air. In severer cases, from six to ten leeches must be repeatedly applied to the lumbar regions. (Dr. F. J. Behrend, p. 32.)

FEVER.—*Intermittent.*—Begin by purging freely with calomel and jalap, followed by senna and salts. Then, after the first paroxysm of the fever has clearly declared itself, give tartarized antimony in such doses as to prostrate the patient's strength, and keep up its effects for some time during all stages of the fever, without producing any violent effects on the stomach or bowels. The dose required for this purpose, in an adult male, will usually be one-tenth of a grain repeated every hour; but the quantity must be changed, and the interval lengthened or shortened according to circumstances. In cases complicated with congestion or inflammation of the internal viscera, local and general bleeding must be employed to aid the effects of the antimony. And in protracted cases, where the system appears to become habituated to the remedy, the tartar emetic should be discontinued,

and twelve or fifteen ounces of blood quickly abstracted by cupping from the epigastric and hypochondriac regions; five grains each of calomel, and James's or antimonial powder should be given at bed-time, and compound jalap powder in the morning; and after the operation of the purgative, if a fresh paroxysm of the fever distinctly declares itself, the tartar emetic should be resumed. (Mr. Moore, p. 21.)

In the depraved state of the blood which follows ague, give manganese, which will be found the most certain remedy for preventing a return of the attacks. The carbonate, malate, or phosphate may be given in the manner described at p. 295. (M. Hannon, p. 295.)

Typhus.—When the petechiæ are very dark, or threatening to run into putridity, or in cases of dysentery attended with great fœtor of the dejecta, give yeast in the following manner:—℞. Cerevis. fermenti, ℥x.; camphoræ ℈ss.; æth. nitric. ℥iv. M. An ounce every one, two, or three hours. (Dr. J. Lamprey, p. 24.)

In many cases of collapse occurring in fever, transfusion of blood might properly be used; as in the exhaustion which occurs in a variety of Irish fever, the crisis of which is marked by excessive perspiration; and also in a more advanced stage of the convalescence, when death is imminent from simple weakness. (Dr. C. H. F. Routh, p. 127.)

In the *diarrhœa and dysentery* of fever, give oil of turpentine in doses of eight minims, in the form of emulsion, and if the case is tedious, change the form of exhibition, by giving Chio turpentine in pills. In some cases the administration of mucilage and sedatives, together with the application of leeches and blisters over the cœcum, is useful, and so also is the application of mercurial ointment in the same region; but mercury, given internally, and the mineral astringents given either by the mouth or by enema, are inefficacious. (Dr. Hudson, p. 23.)

Gout.—Small bleedings to the extent of from three to six ounces, are useful. When purgatives are used they should be the warm cordial ones, which may be advantageously given in the form of tincture, and associated with aromatics and bitters. Colchicum should not be given to the extent of producing vomiting or purging, as it will act quite as well without any such manifestation. To change the uric acid condition of the urine, give alkaline phosphates, tartrates, or citrates, rather than carbonates, or pure alkalies. (Dr. W. Gairdner, p. 38.)

Give lemon-juice, in doses of from half-an-ounce to an ounce three times a day. (Dr. G. O. Rees, p. 40.)

The best aperient in cases of gout, consists of ten grains of *pure* sulphur, and ten grains of sulphate of potash, with occasionally five grains of rhubarb. (Anon, p. 40.)

Rheumatism, *Acute.*—Give lemon-juice in doses of half-an-ounce or an ounce thrice daily. There is no advantage derived from continuing the remedy when debility remains after the subsidence of the inflammatory symptoms. (Dr. G. O. Rees, p. 40.)

Give five grains of pil. sapon. c opio, night and morning, and the acetate of potash in a mixture with sugar, water, and essence of lemon, during the day; and use vapour-baths. (Dr. Golding Bird, p. 42.)

Give phosphate of ammonia, in doses of from ten to thirty grains, in cinnamon water. (Dr. Pepper, p. 42.)

An anæmic condition may supervene in the course of acute rheumatism, resulting, apparently, rather from the natural course of the disease than from the remedies employed. Chalybeates should be given in this condition. (Dr. O'Ferrall, p. 34.)

Chronic.—Apply the heated "hammer." See "*Neuralgia.*"

Ricketts.—[In some excellent papers, printed in the present volume, Mr. E. F. Lonsdale details the mechanical treatment of ricketts and other curvatures of the legs. It is impossible to condense to any extent the excellent directions given by Mr. Lonsdale, without at the same time reader-

ing them obscure: we must therefore refer our readers to the articles themselves, at pp. 103—110.]

Scarlatina.—After an aperient (which should be repeated towards the disappearance of the eruption), give antimony freely, employ tepid sponging, and regulate the diet carefully. Apply lunar caustic, either solid or in solution, to the throat at an early period, and repeat it frequently, and let water acidulated with nitric acid be used as a gargle. (Dr. Newbigging, p. 26.)

Apply a thick flannel pad, wrung out of hot water till almost dry, upon the pit of the stomach and over the region of the heart, and then wrap the patient carefully in several blankets. At the same time wrap another flannel, wrung out of hot vinegar and water, round the throat. After the patient has *perspired* profusely for three or four hours, remove the flannels carefully, and give Stevens's saline powder (to an adult half a drachm) every four hours: and let him use a gargle containing ℈ij. of burnt alum, ℈ij. of Armenian bole, and ʒj. of brown sugar in ʒviij. of water. (Mr. F. A. Bulley, p. 30.)

Take a piece of bacon, the size of the hand, make slits in various directions on the soft side of it, and place it in a warm place to promote the oozing out of the fat. After allowing the bacon to cool, rub the patient with it, morning and evening, diligently over the whole body, remembering to have only one part uncovered at once. Keep up the rubbing twice a day (in severe cases three or four times) for three weeks, and once a day during the fourth. After this, wash the patient daily with cool water and soap, and afterwards the warm bath may be used. (Dr. Schneeman, p. 28.)

Prophylactic Treatment of Scarlatina.—Give belladonna, from one-sixth to one-fourth of a grain twice a day, according to the age of the child,—the first dose before breakfast, and the last at bed-time. The use of this remedy may be continued for several weeks. (Dr. Newbigging, p. 26.)

Give belladonna in the following manner: take of extract of belladonna, one to two grains; distilled water, one ounce. Mix. Give to each child, morning and evening, as many drops as it has years, and continue its use for at least fourteen days. (Dr. Schneeman, p. 28.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Lumbago.—Apply the heated "hammer. See "*Neuralgia.*"

Neuralgia, *Facial and Frontal, and other Forms.*—Use counter-irritation by means of a small iron "hammer" gently heated. Heat the instrument in the flame of a spirit-lamp for fifteen or twenty seconds, and then run it lightly, alternately raising and depressing it, over the place affected. (Dr. G. E. Day, p. 54.)

Neuroma, *or Tumour of Nerve.*—No measure is successful except that of excision. The tumour may either be dissected out of the mass of nerve-fibres among which it has grown, or it may be cut away together with the piece of nerve to which it is attached. The latter measure is generally quite safe and practicable. Lastly amputation may be resorted to [if the disease is situated in an extremity], when other means fail, and the symptoms are urgent. (Dr. R. W. Smith, p. 59.)

Paralysis, *Facial*—In facial paralysis from exposure to cold, apply the "heated hammer," a modification of the iron recommended by Dr. Corrigan, which is to be heated for fifteen or twenty seconds in the flame of a spirit lamp, and then run lightly, being alternately raised and depressed, over the affected surface. (Dr. G. E. Day. p. 54.)

Paraplegia.—The long-continued use of small doses of bichloride of mercury, in solution, has been found beneficial. (Dr. J. C. Hall, p. 184.

Sciatica.—Apply the heated "hammer." See "*Neuralgia.*"

Tetanus, *Traumatic.*—When tetanus is threatened in consequence of a

punctured wound, convert the latter into an incised wound by laying it freely open to the same depth as the original puncture; and if it is then found, that a branch of nerve had been punctured or partially divided, cut it completely through. The plan of cauterizing the wound with a view to promote suppuration, is unadvisable. Amputation is not generally advisable, after tetanic symptoms have set in; there are cases, however, in which it may be resorted to, especially when the injury is so severe, that the limb is not likely ever to be a useful one. (Mr. B. Cooper, p. 114.

A case of tetanus coming on when a wound was nearly healed, was cured after destruction of the cicatrix by means of a red-hot iron. (M. Remy, p. 62.)

AFFECTIONS OF THE RESPIRATORY ORGANS.

Bronchocele.—In some cases, where surgical interference seems called for, the seton will be a legitimate and proper mode of treatment. In performing the operation, do not use a common seton needle, but get a curved trocar made, fixed in a handle, and grooved like a lithotomy staff, and having an eye behind the shoulder. Having threaded this eye with a single silk, which has a skein attached, enter the trocar at the upper part of the tumour in the median line, carry it on in a semicircular direction, so as to embrace a good deal of the tumour, and bring out the point in the median line below. Get hold of the silk thread, then withdraw the trocar, and pull the skein through. (Mr. R. Hey, p. 274.)

Hooping-cough.—Give strong coffee, well sweetened. The dose for a child of two years old is a teaspoonful four times a day, or oftener; for a child of four years, a dessert-spoonful; and for an older patient, a table-spoonful. Let the diet consist principally of fried and roast meat; the quantity of milk used being diminished, and farinaceous food, confectionary, and fruit, being entirely prohibited. (Dr. Jules Guyot, p. 84.)

Larynx, *Ulceration of.*—The application of solution of nitrate of silver is very useful, but the difficulty is to get it applied. Perhaps if the sponge saturated with the solution, instead of being fastened to a piece of whalebone, were fastened to a previous hollow tube, it would answer better, as allowing free respiration. A large elastic male catheter, with a wire bent to the proper curvature, might answer the purpose. (Mr. J. Bedingfield, p. 82.)

Phthisis *Pulmonalis.*—Manganese has appeared to be very useful. The syrup of the iodide appears to be the best form of administration in these cases, but the carbonate, phosphate, or sulphate may also be given. Formulæ are given at p. 295. [Mr Hannon, p. 35.)

Give cod-liver oil in every stage of the complaint. The experience at the Brompton Hospital shows that this remedy "possesses the property of controlling the symptoms of pulmonary consumption, if not of arresting the disease, to a greater extent than any agent hitherto tried." (p. 273.)

The taste of cod-liver oil may be disguised by masticating a morsel of dried orange-peel just before and just after swallowing the dose. (M. Fredericq, p. 274.)

It is more than probable that any fish oil, southern whale oil for instance, would be as efficacious as cod oil. The experiment should be tried on a large scale. (Mr. R. Druitt, p. 292)

Trachea, *Wounds of.*—When the larynx or trachea has been freely divided, first attend to the suppression of the bleeding. When this is effectually done, bring the parts accurately together by sutures, introduced even through the cartilages, if necessary. If very great difficulty of breathing should afterwards occur, threatening asphyxia, open the trachea longitudinally. (Mr. A. Eves, p. 275.)

Tracheotomy.—Do not operate for croup or laryngitis in children if the

ribs are motionless during inspiration as this indicates that effusion has taken place into the pulmonary tissues. If the lungs were free, the ribs would be pressed inwards or backwards by the external atmospheric pressure, when attempts were made at inspiration while there was some serious obstruction to the air passages. (Dr. G. O. Rees, p. 83.)

AFFECTIONS OF THE CIRCULATORY ORGANS.

Aneurism.—[A new instrument for the treatment of aneurism by compression, is described by Dr. Carte, p. 119.]

By Anastomosis.—See "*Nævus.*"

False, of the bend of the Elbow.—Apply a compress over the aneurismal sac, letting it extend upwards in the course of the artery, and carefully bandage the entire limb, beginning with the fingers and thumb, and extending to the axilla; and let the limb be kept elevated on an inclined plane, and perfectly quiet. If this does not succeed, cut into the sac, and tie the artery above and below; or, what is better, tie the artery above the tumour, and then, the impetus of the blood being taken off by the ligature, employ slight pressure upon the tumour. [Mr. John Adams, p. 119.)

Aneurismal Varix.—Tie the brachial artery in the middle of the upper arm, and apply gentle compression over the tumour, and in the course of the radial and ulnar arteries. If this plan fails, the following operation, a much more dangerous one, must be performed: place a tourniquet on the brachial artery, so as completely to compress it, and then make a free incision into the aneurismal sac; turn out the clot of blood, and seek for the upper and lower openings of the artery. Pass the end of a probe into the upper opening, to serve as a guide in separating the artery from the surrounding parts, and secure the vessel: then repeat the same process upon the distal end. (Mr. B. Cooper, p. 124.)

Arteries, *Wounds of.*—Many arteries should be tied at once when wounded, but this does not apply to all. When the brachial artery is wounded in venesection, squeeze the edges of the wound accurately together, and place over it a sixpence or similar firm body, rolled up in a piece of soft rag; then apply something to press upon the radial, ulnar, and humeral arteries, a little below and a little above the wound, and apply a bandage. Bandage the arm to a splint, and keep the patient perfectly quiet. By this means, the wound of the artery will sometimes heal; at any rate the wound in the integuments will, and then, if aneurism form, it can be treated subsequently. (Mr. John Adams, p. 118.)

In deep punctured wounds of the palm, where it is wished to stop the bleeding by compression, apply a bandage round each finger separately, and then continue it round the hand, placing a compress immediately over the wound. Continue the bandage up the forearm, having placed small compresses of cork over the radial and ulnar arteries, and make sufficient pressure to diminish, without wholly stopping, the supply of blood. Lastly, carry the bandage with a moderate degree of tightness up to the shoulder, keep the patient recumbent, and apply cold to the arm. (Mr. B. Cooper, p. 119.)

Hemorrhage.—In all cases of collapse induced by hemorrhage, whether primary or secondary, transfusion of blood should be employed. (Dr. C. H. F. Routh, p. 127.)

After Extraction of Teeth.—In severe cases use the actual cautery. It is best applied by means of a small rod of polished iron, furnished with a sheath; the end of the sheath is applied to the bleeding part, and the heated iron then inserted, and passed along the sheath until it reaches the part. (Mr. B. Cooper, p. 119.)

Nævus.—When the tumour is small, it is often sufficient to keep the surface constantly wetted with a strong solution of alum; or a saturated

solution of alum may be injected into the tumour with a very fine syringe, but this must not be done if the tumour is large. Pressure, by means of a plaster cast bound upon the part, is only applicable when the disease is situated over bone, and is not always successful; neither is vaccination. The application of nitric acid is objectionable, from the hemorrhage which results when the slough separates; the same danger, that of hemorrhage, attends the practice of excision. The ligature is the most generally applicable mode of treatment, and may be applied, if the tumour is small, by passing two needles through its base at right angles to each other, tying the ligature tightly round them, and replacing it by another when it becomes loose; if the tumour is large, another method, Mr. Liston's, which will be understood by a reference to the figure in the text, should be employed. (Mr. B. Cooper, p. 124.)

Apply a solution of iodine ℈ i., in sp. vin. rect. ʒ ss., freely once every day. (Dr. J. O. Bulteel, p. 126.)

Phlebitis.—The principles of treatment are to promote the secretions without lowering the strength, and to allay irritation. For these purposes give a combination of calomel, antimony, and opium, and a mixture containing liq. ammon. acet., tinct. of hyoscyamus, and camphor mixture. Keep the limb elevated, apply fomentations and poultices over the whole limb, and make punctures through the skin wherever it has become tense from effusion; but do not apply leeches. When the local irritation has been thus subdued, give bark, mineral acids, porter and nutritious food, and continue them without fear so long as the natural secretions are duly performed. (Mr. B. Cooper p. 65.)

Transfusion of Blood.—[Minute directions for performing this operation are given by Mr. Walton, p. 132.]

[Instructions for injecting substances into the veins are also given by Dr. M'Gregor, p. 336.]

Veins, *Admission of Air into.*—Compress the wounded vein; place the patient in the recumbent position, and dash cold water in his face; support respiration by artificial means apply warmth and stimuli, such as sinapisms &c., to the surface of the body; hold ammonia to the nose; and give it internally mixed with wine, if the patient be capable of swallowing. (Mr. B. Cooper, p. 64.)

AFFECTIONS OF THE DIGESTIVE ORGANS.

of Anus, *Fissures of.*—Having introduced the left fore-finger into the rectum, make a small opening at the verge of the anus, and through this wound introduce a straight knife, (Blandin's knife) guarded at its point and edges, into the submucous cellular tissue, between the mucous membrane and sphincter. Turn the cutting edge towards the muscle, retract the guard, and cut through the muscle as the blade is withdrawn. Then close the external wound, and keep the bowels lax by means of conf. sennæ. (Mr. W. J. Anderson, p. 145.)

Diarrhœa.—In cases where very great exhaustion occurs, transfusion of blood might probably be advantageous. (Dr. C. H. F. Routh, p. 127.)

Occurring in Fever.—Give oil of turpentine, in doses of six or eight minims, in the form of emulsion: or Chio turpentine in pills. (Dr. Hudson, p. 23.)

Premonitory of Cholera.—See "*Cholera.*"

Dysentery.—In cases where very great exhaustion occurs, transfusion of blood might probably be advantageously employed. (Dr. C. H. F. Routh, p. 127.)

In the Course of Fever.—Give oil of turpentine in doses of six or eight minims in the form of emulsion; or Chio turpentine in pills. (Dr. Hudson, p. 23.)

Tropical.—In *acute* tropical dysentery, give daily enemata of tepid water —four to six pints—by means of O'Beirne's elastic tube, introduced beyond the sigmoid flexure. This soothes the inflamed parts, and gradually softens and brings away the mass of hardened fæces which usually fills the large bowel in this disease. After the intestine has been freely cleared of the fæcal matter, the tube need not be introduced so far. Free venesection will often be required in acute dysentery. In the *chronic* dysentery, employ astringent injections, such as fifteen grains of nitrate of silver dissolved in two or three pints of water, or a mixture of catechu and chalk, or a strong decoction of bark; taking great care to wash out the bowels with a large enema of tepid water, (as above described) every day, before giving the astringent injections. Or, conjointly with the warm water enemata, astringent medicines may be given by the mouth. Leeches will often be required; but very seldom mercury, except in the form of ointment. (Mr. E. Hare, p. 88)

Dyspepsia.—In obstinate cases, where there is great irritability, depression of spirits, and anxiety, examine the urine for oxalate of lime. If this substance is contained in the urine, give nitro-muriatic acid. (Dr. James Begbie, p. 84.)

In cases of extreme exhaustion, when the patient is likely to sink from inanition, employ transfusion of blood; it may enable the patient to rally, so that other remedies may subsequently take effect. (Dr. C. H. F. Routh, p. 127.)

Hernia, *Strangulated.*—Choose the operation by opening the sac. This practice does not increase the danger, as the peritoneum may be wounded with impunity, and peritonitis is a comparatively rare cause of death after hernia operations; whilst there are important advantages to be derived from exposing the intestine. (Mr. W. Hancock, p. 134.)

Always open the sac. Section of the peritoneum is not dangerous, but on the contrary, beneficial; and if the sac is not opened, strangulation will sometimes not be removed by the operation, the sac being returned as well as its contents. (Mr. B. Travers, Jun., p. 137.)

Always open the sac freely; and, after the operation, pass the finger into the abdomen, and examine it for some little space within the stricture, to be sure that the intestine is free. (Sir John Fife, p. 134.)

Never open the sac, except when compelled to it; for the object of the operation may be effected, nine times out of ten, by dividing the stricture external to the sac; the process is less severe and the result more successful than by the old method, and, with moderate care, there is no danger of pushing back the sac together with its contents. The objection that gangrenous intestine or omentum may thus be returned into the abdomen will hardly hold good: for when the contents of the sac are in this state, it is scarcely possible to return them without the exercise of such force as we know to be unjustifiable. And if a portion of intestine is in a *doubtful* state, i.e., not actually perforated, but likely to become so, the safest place for it is in the abdomen. After an operation for hernia, keep the bowels quiet for some days by means of opium; to which calomel may be added, as it maintains the healthy functions of the skin, liver, and kidneys, and renders it easy to unload the bowels by mild means. (Mr. Cock, p. 141.)

Always divide the stricture outside the sac in the first instance; the latter can afterwards be opened if found necessary. Do not make lamellar separations of the fascia, and do not wound more tissues or go deeper with the incision than is absolutely necessary; and especially avoid interference with the hernial tumour and its envelopes, if possible. Make a small incision, large enough to admit the finger, through the skin and superficial fascia on the inner side of the tumour; and through this, reach the seat of stricture and divide it, touching the sac only at the constricted point. (Mr. Gay, p. 140.)

Irreducible Omental.—Adopt every means to get it reduced; and if the

patient cannot spare the time, or will not undergo the discipline necessary for starving out a portion of protruded omentum, and rendering it capable of being returned into the abdomen, recommend an operation. The ease and safety which attend Petit's operation, will justify us in doing this. (Mr. Cock, p. 141.)

Hemorrhoids.—Apply nitric acid for the cure of both external and internal piles. Give the patient an aperient before performing the operation,—a blue pill at bed-time, and a saline purge in the morning; and after the operation, desire the patient to remain in bed or on a sofa the rest of the day. Always advise people who have piles to defecate just before going to bed, and that they may do this, give a dinner pill, containing about a grain each of aloes, soap, extract of liquorice, and gum mastic. (Dr. R. T. Massy, p. 146.)

An instrument for at once cauterising and constricting the piles, is described by (M. Amussat, p. 147.)

External.—Apply potassa fusa, and repeat the application in a few days. (Dr. F. C. Jones, p. 147.)

Œsophagus, *Foreign Bodies in.*—If the body be small and sharp, as a needle or fish bone, use a large goose or swan quill feather, with the barbed portion ruffled, and imbued with oil. The patient's head being supported against the breast of an assistant, lower the tongue, introduce the feather with its concave side downwards into the throat, turn it rapidly round, and draw it out. If the body be large, use a rather straight lithotrite with an imperforate scoop. Introduce it with the blades closed, down to the foreign body, separate the blades sufficiently to grasp the substance, and after a few gentle turns, withdraw it. If the substance is a piece of flesh, and near the cardiac orifice, propel it onward to the stomach with a probang. For extracting coins, use the double ring of Graefe attached to the end of a rod of whalebone, with a steel spring. (Prof. Dieffenbach, p. 132.)

Stricture of.—In some of those cases where no food can be taken, employ transfusion of blood, to give the patient time to rally, so as to admit the introduction of bougies subsequently. (Dr. C. H. F. Routh, p. 127.)

Salivation.—Apply solution of nitrate of silver (3j. in an ounce), to the gums, three or four times daily with a hair-pencil. The teeth will be discoloured, but the stain may be removed by a few applications of a solution of cyanide of potassium, (one part of the salt to two of ditsilled water.) (Mr. Kirby, p. 147.)

Use a gargle composed of half-a-drachm of kreasote to a pint of sage tea. (Dr. Faulcon, p. 93.)

AFFECTIONS OF THE URINARY ORGANS.

Catheterism.—Never use gutta percha catheters. However carefully they are used, they are liable to break, simply from the mode of their construction. (Mr. C. Hawkins, p. 162.)

Chancre.—Ninety-nine out of a hundred cases of venereal sore are better cured without mercury than with it. One of those which cannot be cured without mercury, is a sore characterized by intense induration, to which ulceration succeeds. (Mr. F. C. Skey, p. 166.)

Penis, *Cancer of.*—Employ the actual cautery to execute the amputation. The patient being put under the influence of chloroform, and wet compresses disposed round the penis, the organ is held by means of forceps, and the heated iron applied perpendicularly to the back of the penis. When the fibrous structure is divided, the iron is to be passed into the corpora cavernosa, and so through the penis. Four or five applications will be wanted in all. (M. Bonnet, p. 165.)

Stricture.—Remember that some cases of stricture are attended with such profuse purulent or muco purulent discharge, that we are liable to

overlook the real disease and treat the case as gonnorrhœa. (Mr. H. Smith, p. 159.)

[An instrument for the treatment of strictures by fluid dilatation is described by Mr. T. Machell, p. 159.)

Suppression of Urine.—Give a drop of croton oil, with a full dose of calomel and colocynth; follow this by a draught containing sulphate of magnesia, cream of tartar, and infusion of senna; and then give a large stimulating glyster; so that the bowels may be freely purged. Then cup over the loins, or bleed, if the state of the pulse admits; and give warm baths. Afterwards apply a blister to the loins, and give full doses of powdered cantharides,—a remedy which, however inapplicable theoretically, has been followed by the best results. (Dr. J. C. Hall, p. 100.)

Urethra, *Vascular Tumours of the.*—Remove them by excision or by the ligature, the latter being preferable in consequence of the serious hemorrhage which sometimes attends excision: in either case apply a powerful caustic afterwards to prevent the growth being reproduced. For very small tumours it will be sufficient to use the actual cautery, or caustics, such as potash, nitric acid, and pernitrate of mercury: nitrate of silver is less efficient and much more painful. (Mr. H. B. Norman, p. 162.)

Uric Acid Diathesis.—Order low diet and vegetable food; employ the warm bath, and give carbonate of soda or potash, or liquor potassæ, taking care not to give them till three or four hours after a meal, otherwise they may interfere with digestion. Some vegetable acids may be given, but everything liable to generate acid in the stomach must be scrupulously avoided. (Mr. B. Cooper, p. 149.)

AFFECTIONS OF THE SKIN, &c.

Abscess.—Instead of introducing tents into abscesses, pass a stick of nitrate of silver into the wound and withdraw it immediately. Repeat this every two or three days. (M. Nonat, p. 180.)

Acne.—The disease arising from so many causes, the treatment can only be successfully conducted by taking these into account. Exclusively local, or exclusively general treatment, are equally erroneous. (Dr. T. H. Burgess, p. 170.)

Bedsores.—Apply collodion, with a view of preventing bedsores. (p. 177.)

Chilblains.—In the earliest stage use friction, either dry or with brandy or camphor. When the parts are red, swollen, and shining, but not ulcerated, rub with a solution of camphor, 4 parts, in oil of turpentine, 30 parts. When ulceration has taken place, apply the following ointment: lard, 1 oz.; liq. plumb. acet., 12 drops; thebiac extract, 3 grains; kreasote, 10 drops. (M. Ossieur, p. 177.)

Eczema.—Direct the treatment chiefly to the constitution, giving mild tonics and alteratives. Keep the parts cleanly, and when it is thought the discharge may be safely arrested, apply mild lotions containing carbonate or bicarbonate of potash, and let the bath be frequently used. If these remedies are not sufficient, give active purgatives if the patient is strong; or where these are not indicated, give sarsaparilla and hydriodate of potash; and employ lotions of nitrate of silver or bichloride of mercury. If there is inflammatory tendency in the parts, apply a few leeches behind the ears. If there is much smarting, with abundant serous exudation, give sulphuric acid internally, beginning with a small quantity, administered in barley water, and a little cold water after each dose. (Dr. T. H. Burgess, p. 168.)

In *acute* cases the constitutional treatment is most important, and must depend upon the kind of constitutional affection; the disease being usually associated with either the oxalic, lithic, or phosphatic [diathesis, or with a

scrofulous taint. The local treatment here is of very subordinate importance. But in *chronic* cases, the local treatment is by far the most important, and should consist in the application of a solution of 3ij of the subcarbonate of soda in a pint and a half of water; lint saturated with this solution being applied over the affected parts, and the whole covered with oil-silk. (Dr. J. H. Bennett, p. 168.)

When this affection is connected with a scrofulous constitution, give cod-liver oil. (p. 293.)

Chronic, of the Legs.—This disease is very difficult to manage, but is best treated by the application of the vapours of iodine and sulphur, assisted during the interim of the application by bandaging from the foot upwards. The best way to apply the vapour is the following: get a tin case or a common jar, large enough to hold the limb, and place a heated iron at the bottom of the apparatus, and a grating above it, to protect the limb. Place one of the powders, about to be mentioned, on the heated iron, put the limb instantly into the bath, and cover the mouth over to prevent the vapour from escaping; and continue the bath fifteen or twenty minutes. The powders consist of, sulphur, 3iij.; hydr. sulph. rub., ℈ij.; iodin. gr. x.; divided into six powders. In a few days the proportion of iodine may be increased. (Dr. T. H. Burgess, p. 168.

Impetigo.—In *acute* cases, treat the particular constitutional state which may accompany the eruption; the local treatment being unimportant. In *chronic* cases, on the other hand, be particular about the local treatment. Apply lint saturated with the solution of subcarbonate of soda (3ij. to Oiss. of water,) and cover it with oiled silk. (Dr. J. H. Bennett, p. 168.)

When this affection seems connected with the scrofulous diathesis, give cod-liver oil. (p. 293.)

Lepra.—When the functions have all been got into a healthy state, and the system is free from inflammatory action, begin with Fowler's solution of arsenic, in four or five minim doses, taken thrice a day upon a full stomach; and, without increasing the dose, continue this plan steadily till the system is brought under the influence of the remedy. Continue the medicine for some time after the disappearance of the eruption. (Mr. S. Griffiths, p. 174.)

Let strong tar ointment (⅓ to ¼ of tar) be rubbed in gently thrice a day; while a tepid bath is used once or twice a week. And give Fowler's solution of arsenic, beginning with five drops daily, and increasing a drop every other day, until twelve or fifteen are reached. (M. Emery, p. 174.)

In obstinate cases of lepra, use fumigation with sulphur and iodine vapours. See "*Eczema of the Legs.*" (Dr. T. H. Burgess, p. 168.)

Pityriasis.—When recent, treat as a mildly inflammatory affection. Give gentle saline purgatives twice or thrice a week; in strong constitutions bleed occasionally, or apply half a dozen leeches to the verge of the anus; and order a bath containing four ounces of carbonate of soda, at a temperature of 80° to 90° F., according to the season, every second day. When the disease becomes chronic, use the same treatment as for psoriasis. And in all cases, whatever be the treatment found to be successful, direct it to be continued for a month or six weeks after the eruption has ceased, and the tepid baths to be continued twice or thrice a week for several months longer. (Dr. J. M. Neligan, p. 305.)

Psoriasis.—After bringing all the functions into a healthy state, and taking care that there is no inflammatory action about the system, give arsenic. Begin with four or five minims of Fowler's solution, taken thrice a day on a full stomach; and do not increase the dose, but continue it steadily till the system comes under its influence. And continue this course of arsenic for some time after the disappearance of the disease. (Mr. S. Griffiths, p. 171.)

Let strong tar ointment (⅓ to ¼ of tar) be rubbed in gently thrice a day, and a tepid bath taken once or twice a week. And give arsenic, beginning

with five drops of Fowler's solution (daily ?) and increasing the dose by a drop every other day until twelve or fifteen are reached If any unpleasant symptoms appear, suspend the medicine for a day or two, and then begin again with the small dose. (M. Emery, p. 174.)

Though arsenic is undoubtedly of great value in this and similar diseases, it is more efficacious when combined with iodine. When, indeed, arsenic from any cause cannot be given, iodide of potassium will be a very good substitute. In ordinary cases begin by giving one-twelfth of a grain of iodide of arsenic thrice a day, and after this has been continued for a month or six weeks, order a mixture of liq. arsen. 3ij.; potas. iodid., 3ss.; syr. simpl., 3ij.; and aquæ distil., ℥vss.; a dessert spoonful thrice a day after meals. In inveterate cases, or where this mixture has been continued in gradually increasing doses for some weeks without decided effect, add six grains of iodine to the mixture. In the local forms of the disease, besides the constitutional treatment, let iodide of sulphur ointment be applied thrice a day, the parts being washed before each application with solution of carbonate of soda (3ss. ad Oj.), and then well dried. Begin with not more than eight grains of the iodide of sulphur to the ounce of wax cerate, and never increase it to more than a scruple to the ounce. (Dr. J. M. Neligan, p. 305.)

Snake-bite.—Paint the part bitten, and the whole extent of the swelling, with three or four coats of tincture of iodine. twice daily. (Dr. Whitmire, p. 180.)

Sting *of a bee*.—Apply the juice (oil) of tobacco, as it is found in the mouth end of a smoked cigar or in the reservoir of a German pipe; or apply honey or indigo. (p. 283.)

Ulcers, *Chronic*.—Give half a grain of opium, night and morning, and apply straps and a bandage to the limb. (Mr. F. C. Skey, p. 177.)

Employ fumigation in the following way. ℞. Sulphuris, 3iij.; hydr. sulph. rubr. ℈ij.; iodinii, gr. x. M. Ft. pulv. sex. Put one of these powders upon a heated iron at the bottom of a large jar or tin case. the iron being covered by a grating. Immediately put the limb into the jar, and close it up to prevent the escape of vapour; and continue the bath for fifteen or twenty minutes. In a few days the proportion of iodine may be increased. (Mr. A. Walker, Dr. T. H. Burgess, p. 168.)

AFFECTIONS OF THE EYE AND EAR.

Cornea, *Opacities of the. Nebula*.—Apply daily a solution of nitrate of silver, made with one to three grains of the nitrate to seven drachms of aq. dest., and one drachm of vin. opii without the aromatic. Or in severe cases use the following application once or twice a day; bichloride of mercury, two grains; distilled water, an ounce. In applying these or other lotions, do not drop them into the eye, but touch the opaque spot with a camel-hair pencil, *dipped* into the solution. It is often advantageous to vary the kind of application every week or two. (Dr. J. C. Hall, p. 184.)

Leucoma.—Even in the worst cases, where the central portion of the opacity is quite beyond the power of art to remove, the edges of the spot may be much improved by persevering treatment. Let a very small portion (not larger than a large shot corn) of the following ointment be put into the eye every night or every second night:—nitrate of silver, three to ten grains; solution of diacetate of lead, twenty drops; lard, one drachm. Give a drachm of the solution of bichloride of mercury, with a drachm of tincture of bark, in distilled water, twice a day; this should be given uninterruptedly for a considerable time. And apply counter-irritation behind the ears, or at the back of the neck, by blisters usually, or, if blisters are from any cause inadmissible, by setons or issues. In cases of strumous

[illegible] p. 134.

[illegible] by means of the [illegible] p. 134.

[illegible] by means of [illegible] the parts [illegible] p. 132.

[illegible] Great benefit has been derived from the long-continued use of small doses of the bichloride of mercury, given in solution. Dr. J. C. Hall, p. 134.

Ophthalmia, Granular.—Acetate of lead is a much more efficient and less painful remedy than nitrate of silver. Apply it uniformly over the surface of the eyelids by means of a fine hair-pencil moistened with water and then dipped in the impalpable powder of acetate of lead. M. Bayer, p. 193.

MIDWIFERY AND DISEASES OF WOMEN.

Cauliflower Excrescence of the Os Uteri.—As this disease is, in all probability not of a malignant nature, we may hope by its removal to effect a permanent cure. It is necessary, however, that the removal should be complete; and the safest and most efficacious mode of accomplishing this end is by *free* excision of the affected lip, or, if necessary, of the entire neck of the uterus. (Dr. E. Watson, p. 242.)

Chloroform should be given in all turning, forceps, and crotchet cases, but especially the first. When there is no organic disease present, there is little danger to be apprehended from giving it in any case of labour, especially when it is remembered that immunity from pain may be secured without giving the chloroform to such a degree as to take away reason or consciousness. (Dr. Denham, p. 238.)

Chlorosis.—Salts of manganese are recommended, especially in those cases which are not much benefited by iron. The sulphate, carbonate, or phosphate of manganese may be given in the form of pill, to the extent of three or four grains daily; or the phosphate or iodide may be given in syrup, according to the formulæ given at p. 295. (Mr. Hannon, p. 35.)

Climateric Disease.—Remove any obvious cause of uterine irritation, by appropriate treatment. Use moderate depletion from the uterus, by incisions made into the os, or still better by the application of three or four leeches to the os. And use cold hip-baths, or cold injections into the vagina or rectum. If there are any dysmenorrheal symptoms, use injections with decoction of poppies and laudanum, into the rectum and vagina; if there is menorrhagia, let alum baths (℥xvj. of alum to each gallon of water, at temp. 98°) be used in the intervals between the periods. Keep the bowels lax, but avoid drastics, and especially aloes; and promote the alvine, renal, hepatic, and cutaneous secretions. Let the diet be light and nutritious, with very little wine and no malt liquor or spirits. Let the clothing be warm, and in winter let flannel jackets and drawers be worn. And for the severe symptoms of nervous irritation, give moderate doses of sulphuric ether and valerian. Sulphuric ether is at this period a more decided sedative upon the female constitution, than either morphia, opium, or hyosciamus. (Dr. W. Tyler Smith, p. 232.)

DYSMENORRHŒA.—The administration of lemon-juice has been found very useful in some obstinate cases. (Mr. Headland, p. 40.)

HEMORRHAGE, *Post-Partum.*—In extreme cases, pass one hand into the uterus; introduce the pipe of an enema apparatus by the side of the arm a little way into the vagina, and inject suddenly ice-cold water, which will pass up into the uterus. By the ordinary plan of injecting the vagina, we are not sure that the injection enters the uterus; but by having one hand introduced into this organ, we learn whether it is really injected, and we ascertain also the effects of the injection. This method is very much better than that of introducing a bladder into the uterus and then distending the former; as it is the influence of the cold, and not the pressure, that we want to employ. (Dr. W. Tyler Smith, p. 194.)

INVERSIO UTERI.—When the organ is not affected with malignant disease, and no other special contra-indication exists, and the patient's health is suffering, extirpation of the womb is a proper proceeding. In performing the operation, tie a flat tape, half-an-inch wide, round the inverted vagina, as high up as possible. This, when tightened, acts as a tourniquet, without injuriously pressing on the parts,—it allows sutures to be easily inserted,—and, if retained on for some time after the operation, it keeps the parts closely in apposition, and prevents dragging upon the sutures. (Dr. C. H. Higgins, p. 223.)

LABOUR, *Protracted.*—Never be anxious to promote hasty delivery, and use all operative measures as seldom as it is possible. The late Dr. J. Clarke, of Dublin, who used the forceps only once, in 3,847 labours, was singularly successful in saving the lives of both mothers and children. (Dr. R. Collins, p. 193.)

MAMMARY ABSCESS.—After opening an abscess of the breast, instead of introducing a tent, pass a stick of nitrate of silver into the wound and withdraw it immediately. This is much less painful than a tent, and is quite as efficacious in preventing closure of the opening, and in inducing the contraction of the abscess. It must be repeated every two or three days. (M. Nonat, p. 180.)

MENORRHAGIA.—Give oxide of silver, in doses of half a grain or a grain three times a day, combined with a small quantity of morphia or opium. It is almost a specific for those cases in which there is no organic lesion. If there are high and inflammatory symptoms, these must be subdued before beginning with the remedy. Oxide of silver blackens the stools. (Dr. J. J. Thweat, p. 228.)

Some cases which resist ordinary treatment, will yield to brisk and frequent purgation, with small intermediate doses of calomel. (Mr. G. Corfe, p. 231.)

OS UTERI, *Application of Leeches to the.*—An instrument by means of which this can be very easily accomplished, is described by (Mr. W. Clegg, p. 221.)

PELVIC ABSCESS.—The abscess must be opened where it points. If in the vagina, an incision may be made there; but if in the hypogastric region, adhesion of the two surfaces of the peritoneum must be obtained before opening the abscess. In order to effect this adhesion, apply a portion of potassa fusa cum calce, made into a paste with alcohol, to that part of the abdominal parietes where it is wished to make the opening. When, by the action of the caustic, after one or more applications, the seat of the fluctuation is nearly reached, and adhesion is shown to have taken place by the impossibility of moving the abdominal parietes over the tumour, then make an incision in the centre of the sore. Or, instead of using the caustic, make an incision through only a portion of the thickness of the abdominal parietes, and then apply linseed poultices; the pus will frequently find an exit through the sore. After the abscess is opened, use injections of tepid water, to remove fœtid secretions, and to prevent the admission of air, by keeping the cavity full of liquid. (Dr. E. J. Tilt, p. 230.)

PROLAPSUS UTERI.—[A new elastic truss or supporter is described by Dr C. Ritchie, p. 236.

STERILITY.—The greatest discrimination is required in the use of mechanical treatment; both because it is not easy to distinguish cases in which there is really mechanical obstruction, from perfectly natural conditions, and also because the operations for the relief of such obstructions are not without danger. *Strictures of the os or cervix* sufficient to prevent impregnation are very rarely met with; and the attempt at mechanical dilatation has been followed by a fatal result. The treatment of *malposition of the uterus* supposed to be the cause of sterility, has also caused death. Lastly, *obstructions in the fallopian tubes* are probably never, when they do occur, of a kind which could be overcome by catheterism; and as this operation will be always extremely difficult, and never without danger, its performance appears to be altogether indefensible. (Dr. Oldham, p. 217.)

ULCERATION *of Os Uteri*.—In cases of congestion and erosion, or superficial ulceration, commence with a slight application of nitric acid, or acid nitrate of mercury. Afterwards paint the entire cervix once or twice a week, but not oftener, with the following: R. Iodin, ʒj.; potass. hydroid., ʒij.; aquæ destil.; ʒij.; sp. vini, ʒij. Solve. Continue the use of this application perseveringly, until the congestion is relieved, and then do not discontinue it abruptly, but by degrees. (Dr. Churchill, p. 221.)

MISCELLANEA.

AMPUTATION *of the Penis*.—Is best performed with the actual cautery. The patient being put under the influence of chloroform, and wet compresses disposed round the penis, this organ is put on the stretch, and the cautery applied to its back. Four or five applications of the hot iron will be wanted to complete the section. (M. Bonnet, p. 165.)

ANÆSTHETICS.—Bromoform, Dutch liquid, and common coal gas, are safe and powerful anæsthetics; and the latter, as being cheap, deserves a further trial. Sulphuric ether should be given when there is much constitutional debility, or where the operation is likely to be long and tedious, or where it is likely to produce considerable shock and depression. Chloroform, though very agreeable and powerful, requires more care in its administration than has usually been employed. The principal precautions to attend to in its administration are:—not to give too much at once, and not to let the temperature be too high,—to take care that the air can pass freely in and out of the lungs,—not to give the vapour in too concentrated a form at first,—to withdraw the anæsthetic as soon as there are indications of unconsciousness and insensibility being produced,—and then to give the vapour much more diluted, so as just to keep up the condition of insensibility. (Mr. Nunneley, p. 244, &c.)

Dutch liquid possesses no advantages over chloroform but such as are connected with its slower action and more persistent effects. It is, therefore, only on a few occasions that its use is to be preferred. (Dr. Snow, p. 300.)

Remedies for an Overdose.—Remove the anæsthetic; dash a small quantity of water upon the face and chest, possibly alternating with heat to the latter; use moderate interrupted compression of the lungs, so as to change the air in the lungs, and so get rid of the vapour there remaining; or, with the same intention, blow a stream of air, not too forcibly, through a small tube into the larynx for a minute or two. It is important, in the present state of our knowledge, not to attempt to do too much. (Mr. Nunneley, p. 244.)

Mode of Inhalation.—Use a large, moderately fine, linen handkerchief, folded first into quarter size, and then into a funnel shape. (Mr. Nunneley, p. 244.

Use a piece of spongio-piline sufficiently large to cover the mouth and nostrils, made into a hollow cone, with a few ribs of whalebone fastened on the outside to prevent it from collapsing, and over these a covering of fine leather. [Dr. Denham, p. 238.

Always use an aparatus by which the amount of air can be regulated exactly. (Dr. J. Snow, p. 253.)

Baths, *Vapour.*—[A new vapour bath, by means of which simple or medicated aqueous vapours may be much more easily applied than by the common one, is described by Dr. Golding Bird, p. 276.]

Hot-air.—A convenient and efficient hot-air bath, may be thus extemporized:—the patient being in bed, fasten a blanket loosely round the body; place two chairs upon the bed, so that their backs form an arch over the person, tie them side by side, and over them throw several blankets. A spirit lamp held beneath the foot for a few minutes will raise the temperature to 130° or more. If a spirit lamp is not at hand, one may be made out of a tea-pot, letting the wick pass through the spout. (Mr. W. N. Spong, p. 322.)

Blisters.—Smear the surface to be vesicated with "cantharidal collodion." This will be all that is required. (M. Hisch, p. 291.)

Injections.—[A syringe with a spiral spring, presenting many advantages over the common syringe, is described by Mr. T. H. Wakley, p. 273.]

Issues.—May be thus conveniently made by means of galvanism. Get a piece of perforated zinc fastened or rivetted to a sixpence, shilling, or half-crown. Place this on the spot where the issue is to be made, with the zinc surface next to the skin, and cover it with a piece of spongio-piline moistened with salt and water. Moisten the spongio-piline with salt and water every twelve hours. An eschar will be thus formed in about twelve days, or, if the cuticle is removed before applying the little battery, the slough will be formed in from four to six days, but more irritation is created than by the former method. [Dr. T. Smith, p. 272.)

Leeches, *Application of, to the Os Uteri.*—[A little instrument by the help of which this may be most efficiently and readily effected, is described by Mr. W. Clegg, p. 221.]

Poisoning.—Fresh animal charcoal, when used in sufficient quantity, has the property of withdrawing from their solutions most, if not all known vegetable and animal poisonous principles, and some mineral poisons. It should therefore be immediately administered in all cases; whilst in the case of mineral poisons, the usual antidotes should also be given. (Dr. B. H. Rand, p. 298.)

By Arsenic.—Besides the usual means for removing the poison from the stomach, give calcined magnesia, in doses of a drachm every hour. (Dr. E. Hissel, p. 300.)

Shoulder Joint, *Disease of.*—A peculiar form of chronic arthritis sometimes affects this joint, leading to atrophy both of the soft parts and the bones. The treatment of these cases will vary according to the stage of the disease. During the early and inflammatory period, use repeated leechings and small cuppings, mercurial and belladonna ointment, and emollient and resolvent poultices. During the second stage, that of muscular atrophy, apply large blisters, moxas, or the cautery before and behind the joints, and use baths, with local stimulants and tonic douches, of plain, sulphureous or aromatic waters. Lastly, when the bones become affected, lay aside antiphlogistic and derivative treatment, and employ friction, especially with oil of turpentine; use also passive motion, taking care, however, not to excite fresh inflammation by doing this too soon, and not to run the risk of anchylosis, by delaying it too long. (M. Velpeau, p. 106.)

Stains *From Nitrate of Silver.*—Wet the linen &c., in a solution of bichloride of mercury, (1 part to 31) rubbing it well, and then wash in cold water. (M. Martineng. p. 394.)

Brush over the stains on the linen, skin, nails, or teeth, with a solution of

cyanide of potassium, eight or ten grains to ℈j. of distilled water. If the stains are superficial, one or two applications will suffice; if deep, several will be required. (Mr. Collins p. 148)

TENOTOMY.—[For minute directions as to the performance of this operation, see p. 110.]

VENTILATION.—The most efficient ventilation can be obtained by a very simple apparatus, consisting of an inverted syphon, with unequal legs; the air will pass down the shorter, and be discharged by the longer leg. (Dr. Chowne, p. 284.)

ASIATIC CHOLERA.

PREMONITORY SYMPTOMS.*—On the first appearance of premonitory symptoms, give a Seidlitz powder, or if the patient has a sense of sinking, without diarrhœa, add three drachms of Epsom salts to the Seidlitz; and, when it begins to act, let the patient drink freely of thin beef-tea, well salted. If there is vomiting, apply a sinapism to the epigastrium: if intense thirst, allow Seltzer, soda, or plain water, ad libitum. (Dr. Stevens, p. 310.)

When the purging is not restrainable by opium, kino, and chalk, in full doses, give a pill containing a grain of nitrate of silver, and a quarter of a grain of opium, every hour to the extent of five or six doses, or even more, if necessary. (Mr. G. Ross, p. 331.)

Give opium fearlessly, but judiciously, unless collapse is approaching, *when it must not be given*. To children give the following: ext. hæmatox., ℈ij.; vin. ipec, 3i.; vin. opii, ♏xx.; aq. cinnam. ℥iv. Of this give 3j. after after every motion to a child six months old; 3ij. to a child of one year; and ℥ss. to one of two years. Feed the child on milk mixed with a little lime water, keep it in bed, and cover the abdomen with hot linseed-meal poultices. (*Adopted at* Guy's Hospital, p. 317.)

Nitro-hydrochloric acid has been useful, when the stomach would bear nothing else. (*Adopted at* St. Thomas's Hospital, p. 318.)

Give the following draught every hour or every two hours:—strong nitric acid, two and a half to eight minims; tincture of opium, four to eight minims; syrup of saffron, a drachm; water an ounce and a half. (Mr. W. Batten. p. 328.)

Give two table-spoonsful of the following mixture every two hours, and no astringents whatever,: ℞. Kreasot. gtt. xvj.; mist. acaciæ, ℥ss.; sp. ammon. co., sp. camph. aa 3ij.; ether. chlor. 3iij.; aquæ ℥ viss. M. (Mr. C. N. Spinks, p. 337.)

Give syrup of pernitrate of iron, (which is made with clean iron wire 3vj.; nitric acid ℥iss.; water ℥viij.; sugar ℥xiv.) To each ounce of this syrup, add tinct. opii 3j.; sp. camph., gtt. xxx.; and give sixteen or twenty drops in a little water every hour till relief is obtained. If there is very much pain, add tinct. capsic. 3i. to the ounce of syrup, and give the dose in a little burnt brandy. (Dr. T. Reynolds, p. 345)

Give the liq. chlorinii of the Edinburgh Pharmacopœia, in doses of 3i. or 3iss. in water, every hour, until the symptoms are relieved. (Mr. C. W. Mann, p. 345.)

Give from ♏v. to ♏xv. of chloroform internally, every hour or two, mixed

* For the convenience of the reader we have classified the remedies here recommended, into those applicable to the "*Premonitory Symptoms*," and those applicable to "*Developed Cholera*." It is necessary to observe, however, with regard to *some* of the plans of treatment which we have placed under the latter head, that we are unable to state to what precise period of the disease they refer. Considerable variety occurs in the nomenclature used by different writers, and in the communications sent to the journals during the late epidemic, written no doubt, amidst the hurry of business, the terms "premonitory symptoms," "premonitory diarrœa," "first stage," "early stages," appear to have been used with considerable laxity.

For information respecting some modes of treatment not here described, the reader is referred to *Retrospect*, Part, XVIII. pp. 205-83.

with mucilage; and let the patient drink freely of milk and cold water, with a little sesquicarbonate of soda in it. (Dr. J. Davies, p. 345.)

DEVELOPED CHOLERA.—In the stage of collapse, whether it is just commencing or far advanced, give a pill containing two grains of calomel every ten minutes, with one or at most two drops of laudanum in a little water. Continue the calomel at the same intervals for five, six, or more hours, only lessening the dose and widening the intervals, as the coldness and lividity subside, and discontinuing it when the pulse and skin become natural. After forty or fifty drops of laudanum have been taken, give it only at wide intervals; indeed it might probably be done without at all. Give no opiates in excess, and no stimulants whether alcoholic or pharmaceutic; and employ no other auxiliary means whatever. (Dr. J. Ayre, p. 319.)

Give two grains of calomel, and two drops of laudanum every ten minutes; employ a hot air bath, (see "BATH, *Hot-air*,") and place a drachm of strong mercurial ointment in each axilla; and give ten drops of chloroform with every alternate dose of the calomel. Omit the opiate and chloroform, and give the calomel at longer intervals, when reaction commences. The readiest way of administering the calomel, is to put two drachms on a sheet of paper, and divide into sixty parts; one of these to be given for a dose, from the point of a table-knife. And as to the opiate, bale out any number of spoonsful of water, and add twice the number of drops of laudanum: then, by giving a spoonful of the mixture, using the same spoon, exactly two drops of laudanum will be given. (Mr. W. N. Spong, p. 319.)

Place on the tongue two grains of calomel mixed with a little sugar, and let it be washed down by an effervescing draught. If it is rejected, repeat the dose immediately; if retained, repeat every five or ten minutes till reaction commences, when the period between each dose may be gradually extended to an hour or longer. Large doses at long intervals are of no use. (Dr. P. Niddrie, p. 336.)

Give twenty or thirty grains of calomel at once; repeat it in ten minutes; and employ such auxiliary means as warmth, friction, and gentle stimulants. (Anon. p. 319.)

Complete recovery from the state of collapse has followed the administration of a scruple of calomel every hour for three times. (Dr. J. C. Badeley, p. 319.)

The calomel treatment is of no use whatever. (Dr. Golding Bird, p. 325.)

Calomel is of no use. Before collapse occurs, give a large dose of solid opium, followed by astringents, ammonia, and opium in a fluid form, and an enema composed of a little warm starch, with a full dose of laudanum. When collapse has set in, let cold fluids be taken freely, with a moderate quantity of ether, ammonia, chloric ether, or turpentine; and sponge the surface of the body, and wrap it in warm blankets. (Dr. Hughes, p. 319.)

Give a powder composed of sod. sesquicarb. ℈j.; sodii chlorid. ℥j.; potas. chlorat. gr. vij; dissolve in half a tumbler of water, every hour, half hour, or fifteen minutes, until the circulation is completely restored; then lengthen the intervals between the doses, and when reaction is completely established, leave the medicine off by degrees. Relieve the cramp by rubbing the extremities with hot flannel, and applying sinapisms. Keep a large fire in the room, day and night, and remove all the dejections, &c., immediately they are passed. Seltzer, or cold water, may be allowed *ad libitum*, and occasionally a strong infusion of green tea. But do not let the patient have any solid food for at least five days after recovery from a state of collapse.

In extreme cases, the dose of chloride of sodium may be increased to two drachms, or even more. And in still worse cases, where there is collapse, but neither vomiting nor purging, give an ounce of chloride of sodium, with half a drachm of chlorate of potash, in cold water; and repeat it, if necessary, every half hour, till three doses have been given. Then, if reaction

ensues, keep it up by the smaller doses first mentioned: if it does not, inject a saline fluid either into the intestines or the veins.

If there is great irritability of stomach, apply a large sinapism immediately, inject a dilute solution of common salt, at a temperature of about 100° into the bowels, and give the common soda powders with excess of alkali. When the vomiting abates, give the saline powders, without the common salt, and with rather more chlorate of potash, in a very small quantity of water; or give the chlorate of potash alone, in ten-grain doses.

Above all, do not give opium, or cajeput oil, or use extreme cold, or apply galvanism. (Dr. Stevens, and many others, p. 310, &c.)

In the stage of collapse, give small and frequent doses of chlorate of potash, bicarbonate of soda, and hydrochloric ether, largely diluted in camphor water, or with the patient's drink; or aqua chlorinii with hydrochloric ether, in the same vehicle; and persist in giving them though the vomiting continue. If reaction follow, give calomel and camphor; and in this stage, if the kidneys do not act, give diuretic salts, and apply embrocations with turpentine to the loins, or give an enema containing a little spirit of turpentine. (Dr. J. Copland, p. 318.)

Use saline injections in the stage of collapse. A quart of water at 98° Fahr., with a drachm of common salt and half a drachm of sulphate of potash, may be injected into a vein in the arm. As soon as the pulse is established, envelope the patient in a sheet wrung out of cold water, cover him with several layers of blankets, and apply hot bottles to the epigastrium and calves. After the profuse perspiration which this occasions has continued for, say, upwards of an hour, remove the blankets and sheet, and put the patient in hot blankets. If any fever follows, give calomel and opium. (Mr. H. Howlett, p. 315.)

Inject from 40 to 60 oz. of a saline fluid; waiting after a portion of it has been injected in order to see the effects. A solution like the following may be used; chlorate of potash, fifteen grains; carbonate of soda, one scruple; common salt, two drachms; water, forty-eight ounces. (Dr. Marsden, p. 315.)

Transfusion of blood ought to be employed. If sufficient blood cannot be obtained, inject what blood you can get, first, and afterwards water containing saline substances. (Dr. C. H. F. Routh, p. 127.)

Inject into the veins six ounces of water at blood-heat, with thirty drops of a solution of morphia of the following strength:—crystallized muriate of morphia, five grains; pure hot water, one ounce. When the discharges have been checked by the morphia, give calomel by the mouth, or introduce mercury into the veins in one of the following forms:—one grain of corrosive sublimate, five grains of iodide of potassium, an ounce of warm water; or crystallized cyanide of mercury, one grain, warm water, one ounce. A fluid drachm of either of these solutions may be injected mixed with six ounces of warm water, and repeated if required. (Dr. R. M'Gregor, p. 334.)

In the stage of collapse, wrap the patient completely, except the head, in a sheet wrung out of boiling water, cover him with eight or ten blankets, and give shortly a little weak brandy and water. After keeping him in the blankets an hour, put him into a clean warm bed. Then give nitro-hydrochloric acid with syrup of poppies, either in water or infusion of catechu, every hour or so, if the stomach will bear it. (*Adopted at* St. Thomas's Hospital, p. 318.)

Wrap the patient in a blanket which has been wrung out of the hottest water, and sprinkled with a handful or two of salt, and put four or five blankets closely round him; this may require renewing in an hour or two. Give cold water *ad libitum*, and beef-tea frequently, but no medicine, except there is much sickness, when a little carbonate of ammonia, and soda, and hydrocyanic acid may be given. (Mr. Garrington, p. 328.)

Though the wet sheet, when fairly tried at the LONDON HOSPITAL, had the effect of producing reaction, yet all the patients died. (p. 338.)

Give ice internally in considerable quantities, in the form of a jelly made by constantly stirring water while freezing. The water should have a little common salt added to it, the nauseous taste being covered, if required, by a little lemon-juice. (Dr. J. Arnott, p. 340.)

Administered iced water freely; sponge the whole surface of the body with cold water, and then wrap the patient in a cold wet sheet, and cover with blankets. (Anon. p. 338.)

Give an emetic of sulphate of zinc, and repeat it quickly. If it is not followed by reaction, use the warm bath, apply sinapisms to the epigastrium, and, an hour after the emetic, begin to give an effervescing, solution of citrate of soda every two or three hours. Give ice and iced water to allay the thirst, and give enemata of beef-tea, with or without brandy. Stimulants and astringents are both useless. (*Adopted at* St. Bartholomew's Hospital, p. 318.)

Begin by giving an emetic of twenty-five grains of ipecacuanha. Afterwards give a dose of ether, opium, and chloroform. (Mr. Greenwood, p. 343.)

Avoid any quantity of opium, and avoid also the reckless use of alcoholic stimulants. Cover the limbs with cloths wrung out of warm water, and cover up with blankets; allow diluents to be taken copiously; give chloroform, in doses of ten minims, frequently repeated. In decided collapse, *small* doses, of calomel and opium have been given; an emetic also has roused the patient greatly; but after all, the less that is done in this stage, the better. (*Adopted at* Guy's Hospital, p. 317.)

Give chloroform internally, in doses of from ♏v. to ♏xv. every hour or two, mixed with mucilage. Let the patient drink freely of milk and cold water, with a little carbonate of soda; and let the warm bath, with a large quantity of common salt in it, be frequently used. (Dr. John Davies, p. 344.)

Chloroform was tried at the London Hospital, given both by the stomach and by inhalation, but all the patients died. (p. 338)

Give a pill containing a grain of nitrate of silver and a quarter of a grain of opium, every hour, to the extent of five or six doses, or even more if necessary. Or, if the evacuations are very profuse, give two or three pills at a dose, and repeat them until the evacuations are wholly or partially arrested. (Mr. G. Ross, p. 331.)

Give matico, in the following manner:—Take of tinct. of matico, as strong as it can be prepared, from ʒij. to ℥ss.; tinct. of opium, ʒss. to ʒi.; sp. of camphor, ♏xv. to ♏xx.; water, ℥ss. M. Give a fourth part whenever the sickness or purging comes on. Two doses generally suffice to arrest the disease; but if there is any return, it must be given again. (Mr. T. Slipper, p. 338.)

Give kreasote, according to the following formula: ℞. Creasot. ♏xxiv.; mist. acaciæ, ℥ss.; sp. ammon. co., sp. camph., aa ʒij.; ether. chlor. ʒii.; aquæ, ℥viiss. M. Cap. ℥i. omni horâ. (Mr. C. N. Spinks, p. 339.)

In slighter cases, in the more tractable stages of the disease, and in other cases as an adjunct, give a draught containing from two and a half to eight minims of strong nitric acid, four to eight minims of laudanum, a drachm of syrup of saffron, and an ounce and a half of water, every hour or two. But in confirmed forms of the disease, give phosphorus, in doses of one grain made into a pill with white wax. It may be necessary to give one of these pills at intervals of an hour or two, for two or three times, and afterwards a dose of the acid mixture. (Mr. W. Batten, p. 328.)

Give the liq. chlorinii of the Edinburgh Pharmacopœia, in doses of ʒi. to ʒiss., diluted with water, every hour till the symptoms are relieved. (Mr. C. W. Mann, p. 345)

At an early period, give six grains of quinine, four of calomel, and two of opium, followed by a wineglass of brandy diluted with a little warm water.

If given within the first hour or two of seizure, this will generally check the disease. (Anon. p. 339.)

Employ galvanism, placing one pole of the machine over the heart, and the other over the region of the solar plexus. (Dr. Peacock, p. 339.)

Transmit electro-magnetic shocks, so arranged as to imitate the frequency of the respiratory movements, or not more than twenty-five in the minute, from the nape of the neck to the upper part of the epigastrium. (Mr. Blacklock, p. 340.)

Rub the whole region of the spine with a solution of croton oil and turpentine,—one drachm to the ounce,—for twenty minutes, and then apply a hot and moist bran poultice, contained in a bag, large enough to cover the whole back. (Mr. Reeves, p. 328.)

Let warm water be plentifully injected into the bladder. (*M. Piorry*, p. 345.)

GENERAL INDEX

TO

PARTS XVII, XVIII, XIX, AND XX.

OF

THE RETROSPECT OF PRACTICAL MEDICINE.

POINTING OUT
THE PARTICULAR PART AND ARTICLE IN WHICH INFORMATION ON ANY GIVEN SUBJECT MAY BE REQUIRED.

☞ Only the Parts and Articles are referred to, and not the Pages.

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